```
Enhanced
Glutathio
                                                                                     Telomeras
Telomeras
Glutathio
Altered C
Altered C
Altered C
Altered C
                                                                                                                                                                                                                                                                                                            Human; telomerase reverse transcriptase; hTRT; TRT; diagnosis; prognosis; cell proliferation; cancer; ageing; ribonucleoprotein.
Human tel
Truncated
Human EST
hEST2, a
Human TER
Human tel
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        The present sequence represents human telomerase reverse transcriptase (hTRT), which is a ribonucleoprotein. The present invention also describes the following methods: (A) determining whether a test compound
                                                             Telomeras
                                                                                                                                                          Truncated
                                                                                                                                                                    Truncated
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Pure and recombinant human Telomerase Reverse Transcriptase and its variants - are useful in the diagnosis, prognosis and treatment of cell proliferation conditions especially cancer and ageing.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Lingner J, Nakamura T, Chapman KB, Morin GB, Harley CB;
                         AAY96566 AAC47061 AAC47061 AAW56113 AAW56113 AAW56101 AAW56101 AAW70066 AAY00669 AAY00669
                   Aay28401
                                                                                                                                                                                              ALIGNMENTS
                                                                                                                                                                                                                                                                                            Human telomerase reverse transcriptase.
AAY00627
AAY2861
AAY2861
AAY2861
AAY2861
AAY3656
AAY6656
AAW56113
AAW56101
AAW70057
AAW0059
AAY00652
AAW00652
AAY00669
AAY00663
                                                                                                                                                                                                                                         AAW46957 standard; protein; 1132 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Claim 3; Fig 17; 387pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                           96US-00724643.
97US-00844419.
97US-00851843.
97US-00854050.
97US-0091312.
97US-00912951.
                                                                                                                                                                                                                                                                                                                                                                                           97GB-00020890
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GERON CORP.
UNIV TECHNOLOGY CORP
WPI; 1998-171633/16.
N-PSDB; AAV22379.
01-OCT-1996;
18-APR-1997;
25-APR-1997;
06-MAY-1997;
09-MAY-1997;
14-AUG-1997;
14-AUG-1997;
                                                                                                                                                                                                                                                                                                                                       Homo sapiens
                                                                                                                                                                                                                                                                          13-AUG-1998
                                                                                                                                                                                                                                                                                                                                                                                           01-OCT-1997;
                                                                                                                                                                                                                                                                                                                                                        GB2317891-A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Andrews WH;
                                                                                                                                                                                                                                                                                                                                                                          08-APR-1998
AAW46957;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Cech TR,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (GERO-)
(UYTE-)
                                                                                                                                                                                                                        RESULT 1
                                                                                                                                                                                                                                 AAW46957
Aaw46957 Human tel
Aay32090 Human tel
Aay32090 Human tel
Aay436580 Human tel
Aag64859 Heart mus
Aag64329 Human tel
Aab29930 Human tel
Aab2765 Human tel
Aab27735 Human tel
Aav27735 Human tel
Abr42084 Human tel
Abr42084 Human tel
Abr42084 Human tel
Abr56676 Human tel
Abr58045 Human tel
Abr690599 Human tel
Adg90599 Human tel
Adg90599 Human tel
Aaw47000 Human tel
Aaw47000 Human tel
Aaw47000 Human tel
Aaw47000 Human tel
                                                          January 13, 2005, 15:29:11; Search time 93 Seconds (without alignments) 4366.468 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                              Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                .....TALEAAANPALPSDFKTILD 1132
                                                                                                                                                                                                                                                                                                                                                                                                             Description
          5.1.6
Compugen Ltd.
                                                                                                                                                                          Total number of hits satisfying chosen parameters:
                                                                                                                                                           2002273 segs, 358729299 residues
          GenCore version
Copyright (c) 1993 - 2005
                                                                                                                                                                                                                                                                                                                                                                                   SUMMARIES
                                                                                                                                                                                                                      Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                            - protein search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AAG64859
AAG64329
AAB99930
AAB82765
AAE29226
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ABR58045
ADD21420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ADH72743
ADG70114
ADG90599
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AAW61350
AAW47008
AAW47000
AAW71376
                                                                                                                                                                                                                                                                                                                                                                                                                                              AAY28881
AAY32090
AAY43621
AAY26580
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AAU72735
ABR42384
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ABR42063
ABP56676
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ADI82172
                                                                                                                                 BLOSUM62
Gapop 10.0 , Gapext 0.5
                                                                                             US-10-053-758-225
5961
1 MPRAPRCRAVRSLLRSHYRE.
                                                                                                                                                                                                                                                                                          geneseqp2001s:*
geneseqp2002s:*
geneseqp2003as:*
                                                                                                                                                                                                                                                                 geneseqp1980s:*
geneseqp1990s:*
geneseqp2000s:*
                                                                                                                                                                                                                                                                                                                      geneseqp2003bs:*
geneseqp2004s:*
                                                                                                                                                                                                                                                           A_Geneseq_23Sep04:*
                                                                                                                                                                                             Minimum DB seq length: 0
Maximum DB seq length: 2000000000
                                                                                                                                                                                                                                                                                                                                                                                                             DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1132
1132
1132
1132
                                                                                                                                                                                                                                                                                                                                                                                                             Length
                                                                                                                                                                                                                                                                                                                                                                                                    Query
                                                                                                                                                                                                                                                                                                                                                                                                                             Perfect score:
                                                                                                                                  Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                             Score
                                                                                                                                                                                                                                                                                                                                                                                                                              OM protein
                                                                                                                 Sequence:
                                                                                                                                                           Searched:
                                                                                                                                                                                                                                                          Database
                                                                                                                                                                                                                                                                                                                                                                                                                                                Run on:
                                                                                                                                                                                                                                                                                                                                                                                                    Result
No.
```

Thu Jan

```
is a modulator of hTRT, by detecting the change in hTRT recombinant protein or polynuclectide, on administration of the compound; (B) protein or polynuclectide, on administration of the component; (C) detection preparation of frecombinant telomerase by contracting a protein preparation of fractions and contracting a protein in a sample by binding a relevant probe to the sample and detection; amplifying the complex formed or in the case of RNA detection, amplifying the product and correlating the presence of complex or amplification product with presence of hTRT in the sample, and (D) increasing the product with presence of cumplex, and (D) increasing the proliferation of a vertebrate cell by increase in cell vertebrate cell proliferation to create a medicament that inhibits ageing. A protein preparation of hTRT and the polynuclectide encoding hTRT can be used in the manufacture of medicaments for inhibiting the effect of ageing or cancer. Inhibitors of telomerase activity can be used to treat conditions that are associated with high telomerase activity. A protein preparation conditions that are also be used in the new methods
                                                                                                                                                                                                                                                                                                                                                                   ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         300
                                                                                                                                                                                                                                                                                                                                                                                                   9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  600
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   720
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    780
                                                                                                                                                                                                                                                                                                                                                                                                                                   9
                                                                                                                                                                                                                                                                                                                                                                                                                                                               DARPPPAAPSFRQVSCLKELVARVLQRLCERGAKNVLAFGFALLDGARGGPPEAFTTSVR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ROHHAGPPSTSRPPRPWDTPCPPVYAETKHFLYSSGDKEQLRPSFLLSSLRPSLTGARRL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MPRAPRCRAVRSLLRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW
                                                                                                                                                                                                                                                                                                                                                                                                                               1 MPRAPRCRAVRSLLRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAOCLVCVPW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SYLPNTVTDALRGSGAWGLLLRRVGDDVLVHLLARCALFVLVAPSCAYQVCGPPLYQLGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        VETIFLGSRPWMPGTPRRLPRLPQRYWQMRPLFLELLGNHAQCPYGVLLKTHCPLRAAVT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PQDRLTEVIASIIKPQNTYCVRRYAVVQKAAHGHVRKAPKSHVSTLTDLQPYMRQFVAHL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ATQARPPPHASGPRRRLGCERAWNHSVREAGVPLGLPAPGARRRGGSASRSLPLPKRPRR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 VETIFICSRPWMPGTPRRLPRLPQRYWQMRPLFLELLGNHAQCPYGVLLKTHCPLRAAVT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 RHNERRFLENTKKFISLGKHAKLSLQELTWKMSVRDCAWLRRSPGVGCVPAAEHRLREET
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LFSVLNYERARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDPPELYFVKVDVTGAYDTI
                                                                                                                                                                                                                                                                                                                                                                 Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PAAGVCAREKPOGSVAAPEEEDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PAAGVCAREKPQGSVAAPEEEDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RHNERRFLRNTKKFISLGKHAKLSLQELTWKMSVRDCAWLRRSPGVGCVPAAEHRLREEI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            LAKFLHWLMSVYVVELLRSFFYVTETTFQKNRLFFYRKSVWSKLQSIGIRQHLKRVQLRE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             L.S.EA.EVROHREARPALLTSRLRFIPKPDGLRPIVNMDYVVGARTFRREKRAERLTSRVKA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LFSVLNYERARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDPPPELYFVKVDVTGAYDTI
                                                                                                                                                                                                                                                                                                                                                                 ć
o
                                                                                                                                                                                                                                                                                                                                  Length 1132;
                                                                                                                                                                                                                                                                                                                                                                Indels
                                                                                                                                                                                                                                                                                                                            Query Match 100.0%; Score 5961; DB 2; Best Local Similarity 100.0%; Pred. No. 0; Matches 1132; Conservative 0; Mismatches 0;
                                                                                                                                                                                                                                                                                             Sequence 1132 AA;
                                                                                                                                                                                                                                                                                                                                                                                               н
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 721
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                661
     ò
                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
```

FHOOVWKNPTFFLRVISDTASLCYSILKAKNAGMSLGAKGAAGPLPSEAVQWLCHQAFLL 1080 960 PQDRLTEVIASIIKPQNTYCVRRYAVVQKAAHGHVRKAFKSHVSTLTDLQPYMRQFVAHL 780 Human, catalytic telomerase subunit; therapy; diagnosis; hTC; assay; modulator; treatment; inhibit; cellular disorder; death; defect; cancer; ageing; antisense; neoplastic cell; telomerase-related condition; This sequence represents a novel human catalytic telomerase sub-unit (hTC). This protein can be used in screening assays to identify modulators of telomerase and to treat or inhibit cellular disorders, death, defects and/or other pathological processes involving telomerase, particularly cancer and ageing (also suitable for this are agents that stimulate, inhibit or mimic the activity of the subunit). Antisense e - used in the treating cancer and LCSLCYGDMENKLFAGIRRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPBYGCVVNL NRGFKAGRNMRRKL FGVLRLKCHSLFLDLQVNSLQTVCTNI YKILLLQAYRFHACVLQLP RKTVVNFPVEDEALGGTAFVQMPAHGLFPWCGLLLDTRTLEVQSDYSSYARTSIRASLTF 901 RKIVVNFPVEDEALGGTAFVQMPAHGLFPWCGLLLDTRTLEVQSDYSSYARTSIRASLTF 961 NRGFKAGRNMRRKLFGVLRLKCHSLFLDLQVNSLQTVCTNIYKILLLQAYRFHACVLQLP QETSPLRDAVVIEQSSSLNEASSGLFDVFLRFMCHHAVRIRGKSYVQCQGIPQGSILSTL LCSLCYGDMENKLFAGIRRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGCVVNL 1021 FHQQVWKNPTFFLRVISDTASLCYSILKAKNAGMSLGAKGAAGPLPSEAVQWLCHQAFLL KLTRHRVTYVPLLGSLRTAQTQLSRKLPGTTLTALEAAANPALPSDFKTILD 1132 telomerase ä subunit of human telomerase activity, particularly for Zubov Human catalytic telomerase sub-unit protein. Σ Wick Ā Weichel W, AAW90251 standard; protein; 1132 98DE-01013274. 98DE-01016496. Claim 2; Fig 2; 76pp; German. 98WO-EP003468 97DE-01026329 (first entry) New catalytically active modulation of telomerase Siegmund H, WPI; 1999-081276/07. N-PSDB; AAV72117 (FARB) BAYER Homo sapiens WO9859040-A2 09-JUN-1998; 24-MAY-1999 20-JUN-1997; 14-APR-1998; 30-DEC-1998 26-MAR-1998 ageing; ant tumour cell 841 721 901 1021 1081 AAW90251; 781 781 961 1081 Ö Hagen RESULT 임 a ò 셤 ò 8 ð 셤 ઠ g 8 엄

8 4 8 4 8 4 8 4

```
1020
                                                                                                                                                                                                               1080
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Human telomerase reverse transcriptase protein, hTRT, telomerase, hEST2; catalytic protein component; cell proliferative capacity; DNA primer; telomerase substrate; telomeric DNA synthesis; cell immortality; neoplastic phenotype; diagnostic application; prognostic application; telomerase related condition; cancer; therapeutic agent; telomerase expression; telomerase activity.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   to
a B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              The present sequence is human telomerase reverse transcriptase protein. This is the catalytic protein component of telomerase and is also referred to as BEST2. HTRT has the ability to extend a DNA primer that functions as a telomerase substrate for telomeric DNA synthesis. This correlates with cell proliferative capacity, cell immortality, and the development of a neoplastic phenotype. Human TRT antisense oligomucleotides are useful for diagnostic or prognostic applications telomerase related conditions, including cancer. They are also useful a
    NRGFKAGRNWRRKLFGVLRLKCHSLFLDLQVNSLQTVCTN1YK1LLLQAYRFHACVLQLP
                                                                                                                                   NRGFKAGRIWRRKLFGVLRLKKHSLFLDLQVNSLQTVCTNI YKILLLQAYRFHACVLQLP
                                                                                                                                                                                PHQQVWKNPTFFLRVISDTASLCYSILKAKNAGMSLGAKGAAGPLPSEAVQWLCHQAFLL
                                                                                                                                                                                                FHQQVWKNPTFFLRVISDTASLCYSILKAKNAGMSLGAKGAAGPLPSBAVQWLCHQAFLL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        œ;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Antisense polynucleotides for human telomerase reverse transcriptase
                                                                                                                                                                                                                                           KLTRHRVTYVPLLGSLRTAQTQLSRKLPGTTLTALEAAANPALPSDFKTILD 1132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Harley
                                                                                                                                                                                                                                                            Morin GB,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                cac codon"
                                                                                                                                                                                                                                                                                                                                                                                                                                                      Human telomerase reverse transcriptase protein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Chapman KB,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /note= "Corresponds to
                                                                                                                                                                                                                                                                                                                                                           Ā
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Nakamura T,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    diagnosing or treating cancer
                                                                                                                                                                                                                                                                                                                                                           AAY28881 standard; protein; 1132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Claim 2; Fig 2; 31pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CORP.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              99WO-US007160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          98US-00052919
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        UNIV TECHNOLOGY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Cech TR, Lingner J,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      WPI; 1999-610834/52.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GERON CORP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      N-PSDB; AAZ08150
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Misc-difference
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             31-MAR-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            31-MAR-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                        17-JAN-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              WO9950279-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Andrews WH;
                                                                                                                                                                                1021
                                                                                                                                                                                                                                                                            1081
                                                                                  901
                                                                                                                 961
                                                                                                                                                                                                             1021
                                                                                                                                                                                                                                             1081
                                                    901
                                                                                                                                                961
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          (GERO-)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (UYTE-)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    for
                                                                                                                                                                                                                                                                                                                                         AAY2888
                                            8 &
                                                                                                                                        g
                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                         δ
                                                                                                                                                                                                                                                                                                                                                             ઠે
                                                                                                                                                                              δ
                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                              ö
nucleic acide inhibit telomerase action (by binding to specific mRNA), particularly in neoplastic cells and may be expressed in vivo. Antibodies and fragments of the protein, used as probes or primers, are used to diagnose telomerase-related conditions (especially neoplasia) by (1) detecting abnormal levels of the subunit protein in body fluids or tissues or (11) by measuring the amount of the encoding nucleic acid. Expression of the nucleic acid encoding the subunit mRNA is confined to tumour cells, in contrast to the ubiquitous expression of the telomerase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                360
                                                                                                                                                                                                                                                                                                                          120
                                                                                                                                                                                                                                                                                                                                                        120
                                                                                                                                                                                                                                                                                                                                                                                         180
                                                                                                                                                                                                                                                                                                                                                                                                                      180
                                                                                                                                                                                                                                                                                                                                                                                                                                                       240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  720
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  720
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 780
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                780
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                840
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            LCSLCYGDMENKLFAGIRRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGCVVNL 900
                                                                                                                                                                                                                                                                                         9
                                                                                                                                                                                                                                                                                                                                         DARPPPAAPSFRQVSCLKELVARVLQRLCERGAKNVLAFGFALLDGARGGPPEAFTTSVR
                                                                                                                                                                                                                                                                                                                                                                                                        SYLPNTVTDALKGSGAWGLILRRVGDDVLVHLLARCALFVLVAPSCAYQVCGPPLYQLGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                    ATQARPPPHASGPRRRLGCERAWNHSVREAGVPLGLPAPGARRRGGSASRSLPLPKRPRR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ATQARPPHASGPRRRLGCERAWNHSVREAGVPLGLPAPGARRRGGSASRSLPLPKRPRR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ROHHAGPPSTSRPPRPWDTPCPPVYAETKHFLYSSGDKEQLRPSFLLSSLRPSLTGARRL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RQHHAGPPSTSRPPRPWDTPCPPVYAETKHFLYSSGDKEQLRPSFLLSSLRPSLTGARRL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              VETIFIGSRPWMPGTPRRIPRLPRPQRYWQMRPLFLELLGNHAQCPYGVLLKTHCPLRAAVT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PAAGVCAREKPOGSVAAPEEEDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         LSEAEVRQHREARPALLTSRLRFIPKPDGLRPIVNMDYVVGARTFRREKRAERLTSRVKA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PQDRLTEVIASIIKPQNTYCVRRYAVVQKAAHGHVRKAFKSHVSTLTDLQPYMRQFVAHL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                MPRAPRCRAVRSLLRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW
                                                                                                                                                                                                                                                                                                                                                                                       SYLPNTVTDALRGSGAWGLLLRRVGDDVLVHLLARCALFVLVAPSCAYQVCGPPLYQLGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PAAGVCAREKPQGSVAAPEEEDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RHNERRFLRNTKKFISLGKHAKLSLQELTWKMSVRDCAWLRRSPGVGCVPAAEHRLREEI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       LAKFLHWLMSVYVVELLRSFFYVTETTFQKNRLFFYRKSVWSKLQSIGIRQHLKRVQLRE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LSEAEVROHREARPALLTSRLRFIPKPDGLRPIVNMDYVVGARTFRREKRAERLTSRVKA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PODRLTEVIASIIKPONTYCVRRYAVVQKAAHGHVRKAFKSHVSTLTDLQPYMRQFVAHL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                QETSPLRDAVVIEQSSSLNEASSGLFDVFLRFMCHHAVRIRGKSYVQCQGIPQGSILSTL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  LFSVLNYERARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDPPPELYFVKVDVTGAYDTI
                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                           .
0
                                                                                                                                                                                             Length 1132;
                                                                                                                                                                                                                           Indels
                                                                                                                                                                                             5
                                                                                                                                                                                                                           ;
0
                                                                                                                                                                                               DB
                                                                                                                                                                                           Score 5961; Pred. No. 0; Mismatches
                                                                                                                                                                                                                         ó
                                                                                                                                                                                             100.08;
                                                                                                                                                                                                          ilarity 100.0%;
Conservative
                                                                                                                                                                                                        Best Local Similarity
Matches 1132; Conser
                                                                                                                                                               Sequence 1132 AA;
                                                                                                                                RNA subunit
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            841
                                                                                                                                                                                                                                                                                                                                                        61
                                                                                                                                                                                                                                                                                                                                                                                       121
                                                                                                                                                                                                                                                                                                                                                                                                                      121
                                                                                                                                                                                                                                                                                                                                                                                                                                                    181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 721
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                721
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                781
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               781
                                                                                                                                                                                             Query Match
```

g ò g ઠે g ò g ઠે 요 8 유 ò g δ 엄 8 g ò 셤

ઠે

1132

```
The present sequence represents human telomerase reverse transcriptase (hTRT). Human telomerase is a target for diagnosing and treating diseases relating to call proliferation and senescence, such as cancer, or for increasing the proliferative capacity of a cell. A claimed method for increasing the proliferative capacity of a vertebrate cell, especially a recombinant hTRT polynucleotide encoding an hTRT variant in which residues 192-323, 200-323, 192-271, 200-271, 222-240, 415-450, 192-323 and 415-450, or 192-271 and 415-450 of the present sequence are deleted. A claimed method of preparing recombinant telomerase involves contacting a recombinant hTRT deletion mutant (as above) with a telomerase RNA component such that the 2 proteins associate to form a complex capable of catalysing the addition of nucleotides to a telomerase substrate. A claimed method for reducing telomerase activity in a cell involves introducing a recombinant polynucleotide encoding an hTRT variant having a deletion of amino acids 192-450, 560-565, 637-660, 638-660, 748-764 or component such the present sequence.
        FHQQVWKNPTFFLRVISDTASLCYSILKAKNAGMSLGAKGAAGPLPSEAVQWLCHQAFLL
                                                      New catalytic polypeptide and polynucleotide, useful for increasing catalytic activity in a cell.
                                                                                                                                                                                                                                                    Telomerase reverse transcriptase; human; hTRT; cell proliferation;
                                                                                  Length 1132;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DB 2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ö
                                                                                                                                                                                                                               Human telomerase reverse transcriptase (hTRT).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
100.0%; Score 5961;
Best Local Similarity 100.0%; Pred. No. 0;
Matches 1132; Conservative 0; Mismatches
                                                                                                                                                                  $
                                                                                                                                                             AAY32090 standard, protein, 1132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Claim 13; Fig 1; 24pp; English.
                                                                                                                                                                                                                                                                                                                                                      99WO-US007097
                                                                                                                                                                                                                                                                                                                                                                         98US-00052864
98US-00128354
                                                                                                                                                                                                          (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                    WPI; 1999-610842/52.
N-PSDB; AAZ20279.
                                                                                                                                                                                                                                                                                                                                                                                                           CORP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Sequence 1132 AA;
                                                                                                                                                                                                                                                                                                                                                                                                        (GERO-) GERON
                                                                                                                                                                                                                                                                                    Homo sapiens,
                                                                                                                                                                                                                                                                                                          WO9950386-A2
                                                                                                                                                                                                        17-JAN-2000
                                                                                                                                                                                                                                                                                                                                                    31-MAR-1999;
                                                                                                                                                                                                                                                                                                                               07-OCT-1999,
                                                                                                                                                                                                                                                                                                                                                                        31-MAR-1998;
                                                                                                                                                                                                                                                                                                                                                                                    03-AUG-1998;
                                                              1021
                                                                                                        1081
                                         1021
                                                                                     1081
                   961
                                                                                                                                                                                   AAY32090;
                                                                                                                                                                                                                                                                                                                                                                                                                              Morin GB;
                                                                                                                                                                                                                                                                cancer.
                                                                                                                                                  RESULT
                                    ð
                                                          엄
                                                                                    ð
                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ð
                                                                                                                                      120
                                                                                                                                                                            120
                                                                                                                                                                                                                             240
                                                                                                                                                                                                                                                   240
                                                                                                                                                                                                                                                                      300
                                                                                                                                                                                                                                                                              360
                                                                                                                                                                                                                                                                                                                                       360
                                                                                                                                                                                                                                                                                                                                                           420
                                                                                                                                                                                                                                                                                                                                                                                 420
                                                                                                                                                                                                                                                                                                                                                                                                       480
                                                                                                                                                                                                                                                                                                                                                                                                                            480
                                                                                                                                                                                                                                                                                                                                                                                                                                                  540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                961 NRGFKAGRNMRRKLFGVLRLKCHSLFLDLQVNSLQTVCTNIYKILLLGAYRFHACVLQLP 1020
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     540
therapeutic agents, for inhibition of telomerase expression and activity
                                                                                                                9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 600
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  720
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      720
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            780
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 780
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        840
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             840
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 960
                                                                                                     DARPPPAAPSFRQVSCLKELVARVLORLCERGAKNVLAFGFALLDGARGGPEAFTTSVR
                                                                                                                                                 MPRAPRCRAVRSLLRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW
                                                                                                                                                                                                                       ATQARPPHASGPRRRLGCERAMNHSVREAGVPLGLPAPGARRRGGSASRSLPLPKRPRR
                                                                                                                                                                                                                                      GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG
                                                                                                                                                                                                                                                                                                            ROHHAGPPSTSRPPRPWDTPCPPVYAETKHFLYSSGDKEQLRPSFLLSSLRPSLTGARRL
                                                                                                                                                                                                                                                                                                                          VETIFLGSRPWMPGTPRRLPRLPQRYWQMRPLFLELLGNHAQCPYGVLLKTHCPLRAAVT
                                                                                                                                                                                                                                                                                                                                                                      RHNERRFLRNTKKFISLGKHAKLSLQELTWKMSVRDCAWLRRSPGVGCVPAAEHRLREEI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       LAKFLHWLMSVYVVELLRSFFYVTETTFQKNRLFFYRKSVWSKLQSIGIRQHLKRVQLRE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PAAGVCAREKPQGSVAAPEEEDTTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS
                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PODRLTEVIASIIKPONTYCVRRYAVVOKAAHGHVRKAFKSHVSTLTDLOPYMRQFVAHL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   LSEAEVROHREARPALLTSRLRFIPKPDGLRPIVNMDYVVGARTFRREKRAERLTSRVKA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            LFSVLNYERARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDPPPELYFVKVDVTGAYDTI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           QETSPLRDAVVIEQSSSLNEASSGLFDVFLRFMCHHAVRIRGKSYVQCQGIPQGSILSTL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            LCSLCYGDMENKLFAGIRRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGCVVNL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RKTVVNFPVEDEALGGTAFVQMPAHGLFPWCGLLLDTRTLEVQSDYSSYARTSIRASLTF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ö
                                                 Length 1132;
                                                                      Indels
                                                DB 2;
                                                                     .
0
                                          Query Match
100.0%; Score 5961;
Best Local Similarity 100.0%; Pred. No. 0;
Matches 1132; Conservative 0; Mismatches
                     Sequence 1132 AA;
                                                                                                                                                      61
                                                                                                                                                                                                                                                                                                                                                                             361
                                                                                                                                                                                                  121
                                                                                                                                                                                                                       181
                                                                                                                                                                                                                                              181
                                                                                                                                                                                                                                                                                       241
                                                                                                                                  61
                                                                                                                                                                             121
                                                                                                                                                                                                                                                                   241
                                                                                                                                                                                                                                                                                                             301
                                                                                                                                                                                                                                                                                                                                  301
                                                                                                                                                                                                                                                                                                                                                        361
                                                                                                                                                                                                                                                                                                                                                                                                                        421
                                                                                                                                                                                                                                                                                                                                                                                                                                            481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            541
                                                                                                                                                                                                                                                                                                                                                                                                   421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            721
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  781
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  841
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        721
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       781
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             841
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       901
  SXS
                                                                                        ò
                                                                                                        유
                                                                                                                               ò
                                                                                                                                                   g
                                                                                                                                                                           ઠે
                                                                                                                                                                                              a
                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                           ઠે
                                                                                                                                                                                                                                                                                                                               원
                                                                                                                                                                                                                                                                                                                                                                        q
                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                ð
                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             임
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ઠ
```

Gaps . 0 Indels

ö

MPRAPRCRAVRSLLRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW 60

Ŋ

```
The present sequence represents a human telomerase reverse transcriptase (TRT) polypeptide. The protein is used in the method of the invention. The specification describes a method for activating a T lymphocyte, comprising connacting the T lymphocyte with a dendritic cell that expresses a TRT peptide in the context of a MHC class I or MHC class II molecule. The protein causes induction of an in vivo immunological response to telomerase activity. Cancer cells are characterized by expression of endogenous TRT gene and the presence of detectable to TRT or to TRT-expressing cells, it is possible to selectively target proliferating cells for immunological destruction. The method is used for eliciting an in vivo immune response to telomerase by activating a living a living
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DARPPPAAPSFRQVSCLKELVARVLQRLCERGAKNVLAFGFALLDGARGGPPEAFTTSVR 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      181 ATQARPPHASGPRRRLGCERAWNHSVREAGVPLGLPAPGARRRGGSASRSLPLPKRPRR 240
                                                                                                                                                                                                                                                         reverse transcriptase; TRT; T lymphocyte activation;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SYLPNTVTDALRGSGAWGLLLRRVGDDVLVHLLARCALFVLVAPSCAYQVCGPPLYQLGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SYLPNTVTDALRGSGAWGLLLRRNGDDVLVHLLARCALFVLVAPSCAYQVCGPPLYQLGA
                                                                                                                                                                                                                                                                           dendritic cell; telomerase activity; cancer cell; proliferating cell; immunological destruction; telomerase; cancer; proliferation disease.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1 MPRAPRCRAVRSLLRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW
     KLTRHRVTYVPLLGSLRTAQTQLSRKLPGTTLTALEAAANPALPSDFKTILD 1132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Eliciting an in vivo immune response for prevention and treatment
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2; Length 1132;
                                                                                                                                                                                                                     human telomerase reverse transcriptase (TRT) polypeptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           100.0%; Score 5961;
100.0%; Pred. No. 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 other proliferation diseases/conditions
                                                                                                   ġ.
                                                                                                 AAY43621 standard; protein; 1132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Claim 3; Fig 1; 26pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        98US-0112006P.
                                                                                                                                                                             (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Best Local Similarity ..... Matches 1132; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        WPI; 1999-610845/52
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CORP.
                                                                                                                                                                                                                                                           Human; telomerase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Sequence 1132 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            N-PSDB; AAZ30154
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (GERO-) GERON
                                                                                                                                                                                                                                                                                                                                       Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                           WO9950392-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                    30-MAR-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          31-MAR-1998;
                                                                                                                                                                           26-JAN-2000
                                                                                                                                                                                                                                                                                                                                                                                                                07-0CT-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaeta FCA;
     1081
                                                                                                                                         AAY43621;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      cancers.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
                                                                             AAY43621
ID AAY
                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1020
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  FHQQVWRNPTFFLRVISDTASLCYSILKAKNAGMSLGAKGAAGPLPSEAVQWLCHQAFLL 1080
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               900
                                                                                                                                       180
                                                                                                                                                                                                                   240
                                                                                                                                                                                                                                                                                               300
                                                                                                                                                                                                                                                                                                                                                                           360
                                                                                                                                                                                                                                                                                                                                                                                                                                                    420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         720
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             720
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   780
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               840
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     840
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       960
                                                                                                 120
                                                                                                                                                                           180
                                                                                                                                                                                                                                                                                                                                                                                                              360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         780
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LCSLCYGDMENKLFAGIRRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGCVVNL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DARPPAAPSFROVSCLKELVARVLORLCERGAMWLAFGFALLDGARGGPPEAFTTSVR
                                                                                         DARPPAAPSFRQVSCLKELVARVLQRLCERGAKNVLAFGFALLDGARGGPPEAFTTSVR
                                                                                                                                       SYLPNTVTDALRGSGAWGLLLRRVGDDVLVHLLARCALFVLVAPSCAYQVCGPPLYQLGA
                                                                                                                                                                 SYLPNIVIDALRGSGAWGLLLRRVGDDVIVHLIARCALFVLVAPSCAYQVCGPPLYQLGA
                                                                                                                                                                                                               ATQARPPPHASGPRRLGCERAWNHSVREAGVPLGLPAPGARRGGSASRSLPLPKRPRR
                                                                                                                                                                                                                                       ATQARPPPHASGPRRRLGCERAWNHSVREAGVPLGLPAPGARRRGGSASRSLPLPKRPRR
                                                                                                                                                                                                                                                                                               GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG
                                                                                                                                                                                                                                                                                                                                   GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG
                                                                                                                                                                                                                                                                                                                                                                       ROHHAGPPSTSRPPRPWDTPCPPVYAETKHFLYSSGDKEQLRPSFLLSSLRPSLTGARRL
                                                                                                                                                                                                                                                                                                                                                                                               RQHHAGPPSTSRPPRPWDTPCPPVYAETKHFLYSSGDKEQLRPSFLLSSLRPSLTGARRL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          VETIFLGSRPWMPGTPRRLPRLPQRYWQMRPLFLELLGNHAQCPYGVLLKTHCPLRAAVT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RHNERRFLRNTKKFI SLGKHAKLSLQELTWKMSVRDCAMLRRSPGVGCVPAAEHRLREEI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LAKFLHWLMSVYVVELLRSFFYVTETTFQXNRLFFYRKSVWSKLQSIGIRQHLKRVQLRE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        LSEAEVROHREARPALLTSRLRFIPKPDGLRPIVNMDYVVGARTFRREKRAERLTSRVKA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LSEAEVROHREARPALLTSRLRFIPKPDGLRPIVNMDYVVGARTFRREKRAERLTSRVKA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             LFSVLNYERARRPGLIGASVLGLDDIHRAWRTFVLRVRAQDPPPELYFVKVDVTGAYDTI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PQDRLTEVIASIIKPQNTYCVRRYAVVQKAAHGHVRKAFKSHVSTLTDLQPYMRQFVAHL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     LCSLCYGDMENKLFAGIRRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGCVVNL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         901 RKTVVNFPVEDEALGGTAFVQMPAHGLFPWCGLLLDTRTLEVQSDYSSYARTSIRASLTF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              NRGFKAGRNMRRKLFGVLRLKCHSLFLDLQVNSLQTVCTNI YKILLLQAYRFHACVLQLP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PHOQVWKNPTPFLRVISDTASLCYSILKAKNAGMSLGAKGAAGPLPSEAVQWLCHQAFLL
                                                                                                                                                                                                                                                                                                                                                                                                                                                  VETIFLGSRPWMPGTPRRLPRLPQRYWQMRPLFLELLGNHAQCPYGVLLKTHCPLRAAVT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PAAGVCAREKPQGSVAAPEEEDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        RHNERRFLRNTKKFISLGKHAKLSLOELTWKMSVRDCAWLRRSPGVGCVPAAEHRLREEI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         LPSVLNYERARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDPPPELYFVKVDVTGAYDTI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PODRLTEVIASIIKPONTYCVRRYAVVOKAAHGHVRKAFKSHVSTLTDLOPYMROFVAHL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             QETSPLRDAVVIEQSSSLNEASSGLFDVFLRFMCHHAVRIRGKSYVQCQGIPQGSILSTL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       RKTVVNFPVEDBALGGTAFVQMPAHGLFPWCGLLLDTRTLEVQSDYSSYARTSIRASLTF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      KLTRHRVTYVPLLGSLRTAQTQLSRKLPGTTLTALEAAANPALPSDFKTILD 1132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    961
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1021
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1021
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1081
                                                             61
                                                                                               61
                                                                                                                                                                           121
                                                                                                                                                                                                                   181
                                                                                                                                                                                                                                                       181
                                                                                                                                                                                                                                                                                                                                                                                                              301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         721
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     781
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                961
                                                                                                                                       121
                                                                                                                                                                                                                                                                                               241
                                                                                                                                                                                                                                                                                                                                                                           301
                                                                                                                                                                                                                                                                                                                                                                                                                                                    361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   721
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               781
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           841
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       901
                                                                                             g
                                                                                                                                       ઠ
                                                                                                                                                                         요
                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                           δ
                                                                                                                                                                                                                                                                                           8
                                                                                                                                                                                                                                                                                                                                                                           ઠ
```

of

ö

9

φ

```
The invention relates to a mouse telomerase reverse transcriptase (mTERT) enzyme. Compositions containing mTERT can be used in telomere length assays. Isolated mTERT is useful as an immunogen for the production of monoclonal or polyclonal antibodies. The method is useful for assessing the degree of purification and identification of new mTERT species, such as an mTERT allele, homolog or isoform, or to screen for modulators (antagonists and agonists) of telomerase-mediated DNA replication. Antagonist and agonists of mTERT can be used to modify the activity of other telomerase enzymes such as human TERT (hTERT). The present sequence represents a human TERT enzyme
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PAAGVCAREKPQGSVAAPEEEDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS 480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DARPPPAAPSFROVSCLKELVARVLORLCERGAKNVLAFGFALLDGARGGPPEAFTTSVR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SYLPNIVIDALRGSGAWGLLLRRVGDDVLVHLLARCALFVLVAPSCAYQVCGPPLYQLGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ATQARPPPHASGPRRRLGCERAWNSVREAGVPLGLPAPGARRRGGSASRSLPLPKRPRR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       VETIFLGSRPWMPGTPRRLPRLPQRYWQMRPLFLELLGNHAQCPYGVLLKTHCPLRAAVT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SYLPNTVTDALRGSGAWGLLIRRVGDDVLVHLLARCALFVLVAPSCAYQVCGPPLYQLGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RQHHAGPPSTSRPPRPWDTPCPPVYAETKHFLYSSGDKEQLRPSFLLSSLRPSLTGARRL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          VETIFLGSRPWMPGTPRRLPRLPQRYWQMRPLFLELLGNHAQCPYGVLLKTHCPLRAAVT
                  Telomerase reverse transcriptase; TERT; mouse; telomere length assay;
immunogen; enzyme; telomerase-mediated DNA replication; human.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1 MPRAPRCRAVRSLLRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ATQARPPPHASGPRRRLGCERAWNHSVREAGVPLGLPAPGARRRGGSASRSLPLPKRPRR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gaps
                                                                                                                                                                                                                                                                                        enzyme proteins and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length 1132;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Indele
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2;
                                                                                                                                                                                                                                      я,
                                                                                                                                                                                                                                                                                     (mTERT)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DB
                                                                                                                                                                                                                                    Greenberg
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  100.0%; Score 5961;
100.0%; Pred. No. 0;
ive 0; Mismatches
                                                                                                                                                                                                                                                                                     Mouse telomerase reverse transcriptase
nucleic acids.
                                                                                                                                                                                                           UNIV YESHIVA EINSTEIN COLLEGE.
                                                                                                                                                                                                                                  В,
                                                                                                                                                                                                                                                                                                                         Disclosure; Fig 3; 135pp; English.
                                                                                                                                                                                                                                    Depinho
                                                                                                                                 98WO-US025211
                                                                                                                                                         97US-00979742
98US-00042460
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Best Local Similarity 100.
Matches 1132; Conservative
                                                                                                                                                                                                                                      쏪
                                                                                                                                                                                                                                                            WPI; 1999-347722/29
                                                                                                                                                                                                                                   Allsopp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence 1132 AA;
                                                                                                                                                                                              (GERO-) GERON
(YESH ) UNIV >
                                                                                WO9927113-A1
                                                                                                                                 25-NOV-1998;
                                                                                                                                                         26-NOV-1997;
                                                                                                                                                                      16-MAR-1998;
                                                                                                         03-JUN-1999
                                                                                                                                                                                                                                   Morin GB,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 301
                                                                                                                                                                                                                                                                                    Mouse
      à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             쉱
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1020
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1080
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1080
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1020
                 240
                                          300
                                                                                            360
                                                                                                                   360
                                                                                                                                            420
                                                                                                                                                                     420
                                                                                                                                                                                              480
                                                                                                                                                                                                                      480
                                                                                                                                                                                                                                               540
                                                                                                                                                                                                                                                                       540
                                                                                                                                                                                                                                                                                                600
                                                                                                                                                                                                                                                                                                                                                 999
                                                                                                                                                                                                                                                                                                                                                                                                   720
                                                                                                                                                                                                                                                                                                                                                                                                                                                    780
                                                                                                                                                                                                                                                                                                                        600
                                                                                                                                                                                                                                                                                                                                                                         9
                                                                                                                                                                                                                                                                                                                                                                                                                         720
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            780
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     840
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              840
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       960
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              960
GAAPEPERTPVGGGSWAHPGRIRGPSDRGFCVVSPARPAEEAISLEGALSGIRHSHPSVG
                                                                                                       GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG
                                                                                        ROHHAGPPSTSRPPRPWDTPCPPVYAETKHFLYSSGDKEQLRPSFLLSSLRPSLTGARRL
                                                                                                                                                                                                                                                                                              LAKFLHWLMSVYVVELLRSFFYVTETTFQKNRLFFYRKSVWSKLQSIGIRQHLKRVQLRE
                                                                                                                                                                                                                                                                                                                                                              LSEABURQHREARPALLTSRLRFI PKPDGLRPI WWDYVVGARTFRREKRAERLTSRVKA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LCSLCYGDMENKLFAGIRRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGCVVNL
                                                                                                                                         VETIFLGSRPWMPGTPRRLPRLPQRYWQMRPLFLELLGNHAQCPYGVLLKTHCPLRAAVT
                                                                                                                                                                                           PAAGVCAREKPOGSVAAPEEEDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS
                                                                                                                                                                                                                                            RHNERRFLRNTKKFISLGKHAKLSLQELTWKMSVRDCAWLRRSPGVGCVPAAEHRLREEI
                                                                                                                                                                                                                                                               RHNERRFLRNTKKFISLGKHAKLSLQELTWKMSVRDCAWLRRSPGVGCVPAAEHRLREEI
                                                                                                                                                                                                                                                                                                                                              LSEAEVROHREARPALLTSRLRFIPKPDGLRPIVNMDYVVGARTFRREKRAERLTSRVKA
                                                                                                                                                                                                                                                                                                                                                                                                              QETSPLRDAVVIEQSSSLNEASSGLFDVFLRFMCHHAVRIRGKSYVQCQGIPQGSILSTL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      LCSLCYGDMENKLFAGIRRDGLLIRIVDDFLLVTPHLTHAKTFLRTLVRGVFEYGCVVNL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NRGFKAGRNMRRKLFGVLRLKCHSLFLDLQVNSLQTVCTNIYKILLLQAYRFHACVLQLP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LPSVLNYERARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDPPPELYFVKVDVTGAYDTI
                                                                                                                                                                                                                                                                                                                                                                                                                                                 PODRLTEVIASIIKPONTYCVRRYAVVOKAAHGHVRKAFKSHVSTLTDLOPYMRQFVAHL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    RKTVVNFPVEDEALGGTAFVQMPAHGLFPWCGLLLDTRTLEVQSDYSSYARTSIRASLTF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             RKTVVNFPVEDEALGGTAFVQMPAHGLFPWCGLLLDTRTLEVQSDYSSYARTSIRASLTF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       FHOQVWKNPTFFLRVISDTASLCYSILKAKNAGMSLGAKGAAGPLPSEAVQWLCHQAFLL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     KLTRHRVTYVPLLGSLRTAQTQLSRKLPGTTLTALEAAANPALPSDFKT1LD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Human telomerase reverse transcriptase (hTERT) enzyme.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AAY26580 standard; protein; 1132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (first
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               13-SEP-1999
                                                                                        301
                                                                                                                                                                                                                                                                    481
                                                                                                                301
                                                                                                                                         361
                                                                                                                                                                                           421
                                                                                                                                                                                                                   421
                                                                                                                                                                                                                                            481
                                                                                                                                                                                                                                                                                             541
                                                                                                                                                                                                                                                                                                                      541
                                                                                                                                                                                                                                                                                                                                                                      601
                                                                                                                                                                                                                                                                                                                                                                                                661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            841
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            901
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1021
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1021
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1081
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1081
                                                                                                                                                                  361
                                                                                                                                                                                                                                                                                                                                              601
                                                                                                                                                                                                                                                                                                                                                                                                                        661
                                                                                                                                                                                                                                                                                                                                                                                                                                                721
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         721
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  781
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           781
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    841
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    901
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     961
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              961
                                     ò
                                                            셤
                                                                                     δ
                                                                                                           요
                                                                                                                                        ò
                                                                                                                                                            g
                                                                                                                                                                                      ò
                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                            임
                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                               ð
                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
```

ô

9

9

180

ò

ð

BXXXXX

240 240 300

180

120

300

360 360 420

ij

Š ద ò 셤 ş ద ò 원 Š 셤 ò g ઠે ద ò g 8 g ò 요 ò 셤

```
1 MPRAPRCRAVRSLLRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW
                                                                                                                                                                                                                                                                                                                                                MPRAPRCRAVRSLIRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW
                                                                                                                                                                                                                                                                                                                                                                                 DARPPPAAPSEROVSCLKELVARVLORLCERGAKAVLAFGPALLDGARGGPPEAFTTSVR
                                                                                                                                                                                                                                                                                                                                                                                                          DARPPPAAPSFRQVSCLKELVARVLQRLCERGAKNVLAFGFALLDGARGGPPEAFTTSVR
                                                                                                                                                                                                                                                                                                                                                                                                                                               SYLPNIVTDALRGSGAWGLLLRRVGDDVLVHLLARCALFVLVAPSCAYQVCGPPLYQLGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPABEATSLEGALSGTRHSHPSVG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RQHHAGPPSTSRPPRPWDTPCPPVYAETKHFLYSSGDKEQLRPSFLLSSLRPSLTGARRL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   VETI FLGSRPWMPGTPRRLPRLPQRYWQMRPLFLELLGNHAQCPYGVLLKTHCPLRAAVT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         LAKFLHWLMSVYVVELLRSFFYVTETTFQKNRLFFYRKSVWSKLQSIGIRQHLKRVQLRE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     LSEABVRQHREARPALLTSRLRFIPKDDGLRPIVNMDYVVGARTFRREKRARRLTSRVKA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       LFSVLNYERARRPGILGASVLGLDDIHRAWRTFVLRVRAQDPPPELYFVKVDVTGAYDTI
                                                                                                                                                                                                                                                                                                                                                                                                                                  SYLPNTVTDALRGSGAWGLLLRRVGDDVLVHLLARCALFVLVAPSCAYQVCGPPLYQLGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     VETIFLGSRPWMPGTPRRLPRLPQRYWQMRPLFLELLGNHAQCPYGVLLKTHCPLRAAVT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PAAGVCAREKPQGSVAAPEEEDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ROHHAGPPSTSRPPRPWDTPCPPVYAETKHFLYSSGDKEQLRPSFLLSSLRPSLTGARRL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PAAGVCAREKPQGSVAAPEEEDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        RHNERRFLRNTKKFISLGKHAKLSLQELTWKMSVRDCAWLRRSPGVGCVPAAEHRLREEI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    RHNERRFLRNTKKFISLGKHAKLSLQELTWKMSVRDCAWLRRSPGVGCVPAAEHRLREEI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           LFSVLNYERARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDPPPELYFVKVDVTGAYDTI
                                                                                       Cells capable of differentiating into cardiomyocytes and originating bone marrow or umbilical blood cells for study of cardiomyocyte differentiation and treatment of heart disease.
                                                                                                                                                               The present invention provides cells originating in the human bone mor umbilical blood cells which are capable of differentiating into cardiomyocytes. These cells are useful in the treatment of diseases involving heart muscle degeneration, such as myocardial infarction, the study of cardiomyocyte differentiation. The present sequence is protein described in the exemplification of the invention
                                                                                                                                                                                                                                                                                                         ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ATQARPPPHASGPRRRLGCERAWNHSVREAGVPLGLPAPGARRRGGSASRSLP1
                                                                                                                                                                                                                                                                               Length 1132;
                Gojo
                                                                                                                                                                                                                                                                                                         Indels
                X,
                Sakurada
                                                                                                                                                                                                                                                                                 4
                                                                                                                                                                                                                                                                                                         ö
                                                                                                                                                                                                                                                                                В
                                                                                                                                                                                                                                                                              Query Match
Best Local Similarity 100.0%; Pred. No. 0;
Matches 1132; Conservative 0; Mismatches
                ŝ
                                                                                                                                       Claim 87; Page 143-147; 183pp; Japanese.
                  Ogawa
                ×
               Fukuda
                  ٦,
                                                  WPI; 2001-425656/45
                                                                                                                                                                                                                                                       Ä
                Hata
                                                               N-PSDB; AAH48235
                                                                                                                                                                                                                                                       Sequence 1132
                  Ä
                                                                                                                                                                                                                                                                                                                                                                                  61
                                                                                                                                                                                                                                                                                                                                                                                                          19
                                                                                                                                                                                                                                                                                                                                                                                                                                                          121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   661
                                                                                                                                                                                                                                                                                                                                                                                                                                  121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           661
                Umezawa
Yamada Y
   셤
                                                                                                                                                                                                                                                                                                                                                                                                    8 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                  ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           B &
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    음
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   8 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                  ठ
                                                                                                                                                                                                                                                                                                                                                                                                                                              1020
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1020
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1080
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1080
                                       540
                                                                                       600
                                                                                                              600
                                                                                                                                        99
                                                                                                                                                               99
                                                                                                                                                                                       720
                                                                                                                                                                                                                                          780
                                                                                                                                                                                                                                                                  780
                                                                                                                                                                                                                                                                                            840
                                                                                                                                                                                                                                                                                                                                            900
                                                                                                                                                                                                                                                                                                                                                                  900
                                                                                                                                                                                                                                                                                                                                                                                              960
                                                                                    LSEAEVROHREARPALLTSRLRFIPKPDGLRPIVNMDYVVGARTFRREKRAERLTSRVKA
                                                                                                                                                    LFSVINYERARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDPPPELYFVKVDVTGAYDTI
                                                                                                                                                                                                                                         PODRLTEVIASIIKPONTYCVRRYAVVOKAAHGHVRKAFKSHVSTLTDLQPYMROFVAHL
                                                                                                                                                                                                                                                                 PODRLIEVIASIIKPONTYCVRRYAVVOKAAHGHVRKAPKSHVSTLTDLOPYMRQFVAHL
                                                                                                                                                                                                                                                                                                        NRGFKAGRNMRRKLFGVLRLKCHSLFLDLQVNSLQTVCTNI YKILLLLQAYRFHACVLQLP
                                                                                                                                                                                                                                                                                                                                                                                                                                                          FHOOVWKNPTFFLRVISDTASLCYSILKAKNAGMSLGAKGAAGPLPSEAVQWLCHQAFLL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             FHQQVWKNPTFFLRVISDTASLCYSILKAKNAGMSLGAKGAAGPLPSEAVQWLCHQAFLL
                                                                                                                                                                                       LPSVLNYERARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDPPPELYFVKVDVTGAYDTI
                                                                                                                                                                                                                                                                                           QETSPLRDAVVIEQSSSLNEASSGLFDVFLRFMCHHAVRIRGKSYVQCQGIPQGSILSTL
                                                                                                                                                                                                                                                                                                                                           LCSLCYGDMENKLFAGIRRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGCVVNL
                                                                                                                                                                                                                                                                                                                                                                                            RKTVVNPPVEDEALGGTAFVQMPAHGLFPWCGLLLDTRTLEVQSDYSSYARTSIRASLTF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            disease
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ë
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               £
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            muscle cell differentiation related protein SEQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       muscle cell; human; cell differentiation; heart
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ź
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     protein; 1132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                99JP-00372826.
2000WO-JP001148.
2000WO-JP007741.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2000WO-JP009323
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (KYOW ) KYOWA HAKKO KOGYO KK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       WO200148151-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                28-DEC-1999;
28-FEB-2000;
02-NOV-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      21-SEP-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 05-JUL-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1021
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1081
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1081
                                       481
                                                             481
                                                                                      541
                                                                                                              541
                                                                                                                                                               601
                                                                                                                                                                                                                                                                 721
                                                                                                                                                                                                                                                                                                                                                                    841
                                                                                                                                                                                                                                                                                                                                                                                            901
                                                                                                                                                                                                                                                                                                                                                                                                                     901
                                                                                                                                                                                                                                                                                                                                                                                                                                             961
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AAG64859
                                                                                                                                       601
                                                                                                                                                                                       661
                                                                                                                                                                                                               661
                                                                                                                                                                                                                                         721
                                                                                                                                                                                                                                                                                           781
                                                                                                                                                                                                                                                                                                                  781
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      961
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Heart
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Heart
```

ö

120 120 180 180 240

9

300 300 360 420 420 480 480 099

```
1020
                                                                                                                                                                                                                                     1080
                           780
                                                 840
                                                                                             900
                                                                                                                    900
                                                                                                                                           960
                                                                                                                                                                960
              PQDRLTEVIASIIKPQNTYCVRRYAVVQKAAHGHVRKAFKSHVSTLTDLQPYMRQFVAHL
                                             QETSPLRDAVVIEQSSSLNEASSGLFDVFLRFMCHHAVRIRGKSYVQCQIPQGSILSTL
                                                          LCSLCYGDMENKLFAGIRRDGLLLRLVDDFLLVTPHLTHAKTFLKTLVRGVPEYGCVVNL
                                                                                                       RKTVVNPPVEDEALGGTAFVQMPAHGLFPWCGLLLDTRTLEVQSDYSSYARTSIRASLTF
                                                                                                                                                   NRGFKAGRNMRRKLFGVLRLKCHSLFLDLQVNSLQTVCTNIYKILLLQAYRFHACVLQLP
                                                                                                                                                                                               New adult bone marrow-originated cells capable of differentiating into heart muscle cells, applicable as remedies for various heart diseases particularly with damaged heart muscle accompanying degeneration.
                                                                                                                                                                                                                               FHQQVWKNPTFFLRVISDTASLCYSILKAKNAGMSLGAKGAAGPLPSEAVQWLCHQAFLL
                                                                                                                                                                                                                                                                            KLTRHRVTYVPLLGSLRTAQTQLSRKLPGTTLTALEAAANPALPSDFKTILD 1132
                                                                                                                                                                                                                                                                                         cell differentiating agent; bone marrow;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ×
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Sakurada
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Disclosure; Page 128-134; 158pp; Japanese.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ŝ
                                                                                                                                                                                                                                                                                                                                                                                                                                                   genesis; cardiant; cell differenti;
muscle cell; heart disease; human.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ogawa
                                                                                                                                                                                                                                                                                                                                                            protein; 1132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Fukuda K,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     28-FEB-2000; 2000WO-JP001148.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             99JP-00372826
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (KYOW ) KYOWA HAKKO KOGYO KK
                     721
                                                                   781
                                                                                                                                                                                                                                                     1021
 721
                                            781
                                                                                         841
                                                                                                                841
                                                                                                                                      901
                                                                                                                                                             901
                                                                                                                                                                                   961
                                                                                                                                                                                                         196
                                                                                                                                                                                                                                1021
                                                                                                                                                                                                                                                                             1081
                                                                                                                                                                                                                                                                                                  1081
ò
                   셤
                                                               a
                                                                                       ò
                                                                                                          g
                                                                                                                                  ò
                                                                                                                                                         셤
                                                                                                                                                                                                     8
                                           ò
                                                                                                                                                                                 ò
                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                            ò
```

ö 120 240 099 099 720 1020 120 180 180 240 300 300 360 360 420 420 480 480 540 540 909 9 720 780 9 840 9 780 840 900 900 960 960 DARPPPAAPSFRQVSCLKELVARVLQRLCERGAKWVLAFGFALLDGARGGPPEAFTTSVR MPRAPRCRAVRSILLRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW SYLPNTVTDALRGSGAWGLLLRRVGDDVLVHLLARCALFVLVAPSCAYQVCGPPLYQLGA GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEBATSLEGALSGTRHSHPSVG ROHHAGPPSTSRPPRPWDTPCPPVYAETKHFLYSSGDKEQLRPSFLLSSLRPSLTGARRL VETIFLGSRPWMPGTPRRLPRLPQRYWQMRPLFLELLGNHAQCPYGVLLKTHCPLRAAVT ATQARPPHASGPRRIGGERAWNHSVREAGVPLGLPAPGARRGGSASRSLPLPKRPRR PAAGVCAREKPQGSVAAPEEEDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS LSEAEVROHREARPALLTSRLRFIPKPDGLRPIVNMDYVVGARTFRREKRAERLTSRVKA LFSVLNYERARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDPPPELYFVKVDVTGAYDTI PQDRLTEVIASIIKPQNTYCVRRYAVVQKAAHGHVRKAFKSHVSTLTDLQPYMRQFVAHL RHNERRFLRNTKKFISLGKHAKLSLQELTWKMSVRDCAWLRRSPGVGCVPAAEHRLREEI QETSPLRDAVVIEQSSSLNEASSGLFDVFLRFMCHHAVRIRGKSYVQCQIPQGSILSTL LCSLCYGDMENKLFAGIRRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGCVVNL RKTVVNFPVEDEALGGTAFVQMPAHGLFPWCGLLLDTRTLEVQSDYSSYARTSIRASLTF Gaps ô 1132 Length Indele ö DB 4; Score 5961; Pred. No. 0; Mismatches Score ö 100.0%; Query Match
Best Local Similarity 100.
Matches 1132; Conservative 61 61 121 121 241 181 241 301 301 361 421 361 421 481 601 481 541 541 601 661 661 721 721 781 781 841 841 901 901 961 961 셤 ò 셤 ò ద 셤 à ò ò g à g ઠે g ò g à 셤 ઠે 셤 Š තු g 8 à g ద ò ò 셤 ठ g 8 셤

σ

```
The present invention describes cells originating in bone marrow or andical blood cells which are capable of differentiating into cardiowycytes. Also described are: (1) cardiomycoytes produced by the differentiation of the cells; (2) a method for carrying out the cilferentiation into cardiomyocytes, regulated by a promotional and/or inhibitory factor; (3) a method for the differentiation of the cells into cell types other than cardiomyocytes; (4) drug compositions promoting the formation of heart muscle and regeneration of heart tissue which contain the cells; (5) a method for the production of antibodies which recognise the cells; (6) a method for screening factors which promote the proliferation of the cells; (7) a method for immortalising the cells by expressing telomarsas in them; (8) drug compositions for the treatment of heart disease which contain the immortalised cells; and (9) cell-free supernatant from the culture of the cells and its use in promoting their of differentiation into cardiomyocytes. The cells are used in the treatment of infarction and in the study of cardiomyocyte differentiation. Addition the contain the study of cardiomyocyte differentiation. Addition and in the study of cardiomyocyte differentiation.
                                        1080
  FHQQVWKNPTFFLRVISDTASLCYSILKAKNAGMSLGAKGAAGPLPSEAVQWLCHQAFLL 1080
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Cells capable of differentiating into cardiomyocytes and originating in bone marrow or umbilical blood cells for study of cardiomyocyte differentiation and treatment of heart disease.
                    Differentiation; heart muscle cell; cytokine; transcription factor; proliferation; surface antigen; heart disease; cardiomyocyte; bone marrow; umbilical blood cell; heart muscle degeneration;
                                                                        ŝ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          60,00
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sakurada K,
                                                                                                                                                                                                                                                                                                                                 Human telomerase protein sequence SEQ ID NO:31
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          s,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Claim 146; Page 137-141; 187pp; Japanese.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  exemplification of the present invention
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Ogawa
                                                                                                                                                                                                                Ź
                                                                                                                                                                                                              AAB99930 standard; protein; 1132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Fukuda K,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           28-DEC-1999; 99JP-00372826.
28-FEB-2000; 2000WO-JP001148.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     02-NOV-2000; 2000WO-JP007741.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (KYOW ) KYOWA HAKKO KOGYO KK
                                                                                                                                                                                                                                                                                            (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                             myocardial infarction
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2001-425655/45.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Hata J,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Ä
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  WPI; 2001-425655,
N-PSDB; AAH44366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       WO200148150-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence 1132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Homo sapiens
                                                                                                                                                                                                                                                                                          26-SEP-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             05-JUL-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Umezawa A,
Yamada Y;
                                      1021
                                                                            1081
                                                                                                              1081
1021
                                                                                                                                                                                                                                                      AAB99930;
                                                                                                                                                                                              AAB99930
                                                                                                                                                                        RESULT
                                      셤
                                                                            ઠ
                                                                                                            셤
                                                                                                                                                                                                                ò
```

100.0%; Score 5961; DB 4; Length 1132;

Query Match

```
1020
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NGGFKAGRNWRRKLFGVLRLKCHSLFLDLQVNSLQTVCTNIYKILLLQAYRFHACVLQLP 1020
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PHQQVWKNPTFFLRVISDTASLCYSILKAKNAGMSLGAKGAAGPLPSEAVQWLCHQAFLL 1080
             ö
                                                                                   DARPPPAAPSFRQVSCLKELVARVLQRLCERGAKNVLAFGFALLDGARGGPPEAFTTSVR 120
                                                                                                                                      180
                                                                                                                                                                                                                                                                                                                                                       VETIFIGSRPWMPGTPRRLPRLPQRYWQMRPLFLELLGNHAQCPYGVLLKTHCPLRAAVT 420
                                                                                                                                                                                                                                                                                                                                                                                           480
                                                                                                                                                                                                                                                                                                                                                                                                                   480
                                                                                                                                                                                                                                                                                                                                                                                                                                            540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            600
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    600
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            099
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              720
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    720
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              780
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 840
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      840
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  960
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         960
                                                                                                            120
                                                                                                                                                      240
                                                                                                                                                                                                                                        300
                                                                                                                                                                                                                                                                                        360
                                                                                                                                                                                                                                                                                                    VETIFLGSRPWMPGTPRRLPRLPQRYWQMRPLFLELLGNHAQCPYGVLLKTHCPLRAAVT 420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       780
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        900
                                                                                                                                                                                                                                                              GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG 300
                                                             9
                                                                                                                                                                                                                                                                                                                                                                                                          PAAGVCAREKPQGSVAAPEEEDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             LAKFLHWLMSVYVVELLRSFFYVTETTFQKNRLFFYRKSVWSKLQSIGIRQHLKRVQLRE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          LAKFLHWLMSVYVVELLRSFFYVTETTFQKNRLFFYRKSVWSKLQSIGIRQHLKRVQLRE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PQDRLTEVIASI IKPQNTYCVRRYAVVQKAAHGHVRKAFKSHVSTLTDDQPYMRQFVAHL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              QETSPLKBAVVIEQSSSLNEASSGLFDVFLRFWCHHAVRIRGKSYVQCQGIPQGSILSTL
                                                                                                 SYLPNTVTDALRGSGAWGLLLRRVGDDVLVHLLARCALFVLVAPSCAYQVCGPPLYQLGA
                                                                                                                                                                                                     RHNERRFLRNTKKFISLGKHAKLSLQELTWKMSVRDCAWLRRSPGVGCVPAAEHRLREEI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              LSEAEVROHREARPALLTSRLRFIPKPDGLRPIVNMDYVVGARTFRREKRAERLTSRVKA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           LCSLCYGDMENKLFAGIRRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPBYGCVVNL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                RKTVVNFPVEDEALGGTAFVQMPAHGLFPWCGLILDTRTLEVQSDYSSYARTSIRASLTF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NRGFKAGRNMRRKLFGVLRLKCHSLFLDLQVNSLQTVCTNIYKILLLQAYRFHACVLQLP
                                                 ATQARPPHASGPRRRLGCERAWNHSVREAGVPLGLPAPGARRRGGSASRSLPLPKRPRR
                                                                                                                                                                                                                                        GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG
                                                                                                                                                                                                                                                                                       ROHHAGPPSTSRPPRPWDTPCPPVYARTKHFLYSSGDKEQLRPSFLLSSLRPSLTGARRL
                                                                                                                                                                                                                                                                                                                                                                                             PAAGVCAREKPQGSVAAPEEEDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS
                                                                                                                                                                                                                                                                                                                                                                                                                                            RHNERRFLRNTKKFISLGKHAKLSLQELTWKMSVRDCAWLRRSPGVGCVPAAEHRLREEI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              LFSVLNYERARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDPPPELYFVKVDVTGAYDTI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 QETSPLRDAVVIEQSSSLNEASSGLFDVFLRFMCHHAVRIRGKSYVQCQGIPQGSILSTL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  LCSLCYGDMENKLFAGIRRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGCVVNL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RKTVVNFPVEDEALGGTAFVOMPAHGLFPWCGLLLDTRTLEVQSDYSSYARTSIRASLTF
                                    MPRAPRCRAVRSLLRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW
              Gaps
             ö
             Indels
             .;
0
 ö
           0; Mismatches
 Pred. No.
100.0%;
           Matches 1132; Conservative
 Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                 361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          841
                                                                                      61
                                                                                                            61
                                                                                                                                                             121
                                                                                                                                                                                                               181
                                                                                                                                                                                                                                                               241
                                                                                                                                                                                                                                                                                                                301
                                                                                                                                                                                                                                                                                                                                                                                                                   421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            961
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1021
                                                                                                                                      121
                                                                                                                                                                                      181
                                                                                                                                                                                                                                         241
                                                                                                                                                                                                                                                                                        301
                                                                                                                                                                                                                                                                                                                                          361
                                                                                                                                                                                                                                                                                                                                                                                           421
                                                                                                                                                                                                                                                                                                                                                                                                                                            481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              721
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       721
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                781
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         781
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  841
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  901
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         901
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   961
                                                        В
                                                                                   ò
                                                                                                           셤
                                                                                                                                                            셤
                                                                                                                                                                                      ò
                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                           윤
                                                                                                                                                                                                                                                                                        à
                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                  유
                                                                                                                                                                                                                                                                                                                                                                                                                                        δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            염
                                     à
                                                                                                                                      ò
                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                         ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  8
```

```
Query Match
100.0%; Score 5961;
Best Local Similarity 100.0%; Pred. No. 0;
Matches 1132; Conservative 0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sequence 1132 AA;
                                                                                                                                           WO200160391-A1
                                                                                                                                                        23-AUG-2001
                                                                                                                                                                                                                    Zanetti M;
           Peptide
                        Peptide
                                      Peptide
                                                   Peptide
                                                                Peptide
                                                                              Peptide
                                                                                            Peptide
                                                                                                         Peptide
                                                                                                                      Peptide
    1021 FHQQVWKNPTFFLRVISDTASLCYSILKAKNAGMSLGAKGAAGPLPSEAVQWLCHQAFLL 1080
                     1081 KLTRHRVTYVPLIGSLRTAQTQLSRKLPGTTLTALEAAANPALPSDFKTILD 1132
              KITRHRVTYVPLIGSLRTAQTQLSRKLPGTTLTALEAAANPALPSDFKTILD 1132
                                                                                                                   Telomerase reverse transcriptase; hTRT; human; cancer; tumour; cytotoxic T lymphocyte; major histocompatibility complex; human leucocyte antigen; HLA-A2.1; vaccine.
                                                                                                                                                                                .31
:e= "HLA-A2.1 binding motif"
                                                                                                                                                                                            .84
e= "HLA-A2.1 binding motif"
                                                                                                                                                                        /note= "HLA-A2.1 binding motif"
                                                                                                                                                                                                                               motif"
                                                                                                                                                                                                                                                                       motif"
                                                                                                                                                                                                                                                                                                  motif"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /note= "HLA-A2.1 binding motif"
865. .873
/label= p865
                                                                                                                                                                                                                                             motif"
                                                                                                                                                                                                                                                                                     motif"
                                                                                                                                                                                                                                                                                                                      187. .495
/note= "HLA-A2.1 binding motif"
                                                                                                                                                                                                                                                                                                                                                 motif"
                                                                                                                                                                                                                                                                                                                                                                                        motif"
                                                                                                                                                                                                                                                                                                                                                                           "HLA-A2.1 binding motif"
                                                                                                                                                                                                                                                                                                                                                                                                                   "HLA-A2.1 binding motif"
                                                                                                                                                                                                                                                                                                                                                                                                                                "HLA-A2.1 binding motif"
                                                                                                                                                                                                                                                                                                                                                                                                                                              "HLA-A2.1 binding motif"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        'note= "HLA-A2.1 binding motif"
                                                                                                                                                                                                                                                                                                                             /note_
540. .548
/label= p540
.-a= "HLA-A2.1 binding mo
                                                                                                                                                                                                                                                                                  /note= "HLA-A2.1 binding
388. .396
/note= "HLA-A2.1 binding 1
                                                                                                                                                                                                                                     152. .160
/note= "HLA-A2.1 binding
                                                                                                                                                                                                                "HLA-A2.1 binding
                                                                                                                                                                                                                               "HLA-A2.1 binding
                                                                                                                                                                                                                                                          "HLA-A2.1 binding
                                                                                                                                                                                                                                                                      'note= "HLA-A2.1 binding
                                                                                                                                                                                                                                                                                                        107. .415
/note= "HLA-A2.1 binding
                                                                                                                                                                                                                                                                                                                                                                                        "HLA-A2.1 binding
                                                                                                                                                                                                                                                                                                                                                                                                     "HLA-A2.1 binding
                                                                                                                                                                                                                                                                                                                                                                                                                                                           "HLA-A2.1 binding
                                                                                                      Human telomerase reverse transcriptase.
                                                             AAB82765 standard; protein; 1132 AA.
                                                                                                                                                             Location/Qualifiers
                                                                                        29-OCT-2001 (first entry)
                                                                                                                                                                                                                                                   .354
                                                                                                                                                                                                                                                                                                                                                                                        /note= "HL
705. .713
/note= "HL
                                                                                                                                                                                                                                                                .361
                                                                                                                                                                                                                        .148
                                                                                                                                                                                                                                                                              .379
                                                                                                                                                                                                                                                                                                                                                                                  .580
                                                                                                                                                                                                                                                                                                                                                                                                             .732
                                                                                                                                                                                                                                                                                                                                                                                                                          . 780
                                                                                                                                                                                                                                                                                                                                                                                                                                       .805
                                                                                                                                                                                                                                                                                                                                                                                                                                                     .820
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   .844
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              .871
                                                                                                                                                                                                                                                                                                                                                                     . 563
                                                                                                                                                                                                                              /note= '
152. .16
                                                                                                                                                                                                                                                                                                                                                                                                                  /note=
772. .70
                                                                                                                                                                                                                                                          'note=
                                                                                                                                                                                                                 'note=
                                                                                                                                                                                                                                                                                                                                                                           note=
                                                                                                                                                                                                                                                                                                                                                                                                                                 note=
                                                                                                                                                                                                                                                                                                                                                                                                                                              /note=
                                                                                                                                                                                                                                                                                                                                                                                                                                                            note=
                                                                                                                                              Homo sapiens
                                                                           AAB82765;
               1081
                                                                                                                                                                              Peptide
                                                                                                                                                                  Peptide
                                                                                                                                                                                             Peptide
                                                                                                                                                                                                          Peptide
                                                                                                                                                                                                                       Peptide
                                                                                                                                                                                                                                     Peptide
                                                                                                                                                                                                                                                  Peptide
                                                                                                                                                                                                                                                                eptide
                                                                                                                                                                                                                                                                            Peptide
                                                                                                                                                                                                                                                                                           Peptide
                                                                                                                                                                                                                                                                                                        Peptide
                                                                                                                                                                                                                                                                                                                     Peptide
                                                                                                                                                                                                                                                                                                                                  Peptide
                                                                                                                                                                                                                                                                                                                                                      Peptide
                                                                                                                                                                                                                                                                                                                                                                                              Peptide
                                                                                                                                                                                                                                                                                                                                                                   Peptide
                                                                                                                                                                                                                                                                                                                                                                                 Peptide
                                                                                                                                                                                                                                                                                                                                                                                                                          Peptide
                                                                                                                                                                                                                                                                                                                                                                                                            Peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                      Peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                   Peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Peptide
                                                RESULT 10
                                                        AAB82765
                                                                           염
               ठ
                            Б
```

The present sequence is that of human telomerase reverse transcriptase (HTRT). The sequence was analysed for 9-mer peptide sequences containing known blading motifs for the human leukcoyte antigen HLA-A2.1 molecule. From an initial panel of about 30 candidate peptides, 2 sequences, central panel of about 30 candidate peptides, 2 sequences. Crown an initial panel of about 30 candidate peptides, 2 sequences. Crown antitial panel of about 30 candidate peptides, 2 sequences. Crown antitial panel of about 30 candidate peptides, 2 sequences. Crown alority of healthy individuals as well as patients with prostate cancer immunised in vitro against these 2 HLA-A2.1 restricted peptides developed hTRT-specific cytotoxic T lymphocytes (CTL). The cancer patients of the prostate, breast, colon, lung and melanoma, demonstrating immunological recognition of endogenously-processed hTRT peptides. In vivo immunisation of HTRT peptides. The induction of CTL response in vitro and in vivo, and the susceptibility to lysis of tumour cells of various origins by hTRT peptides. The induction of cold serve as a universal cancer vaccine for crigin comprises at least 1 hTRT peptide in an amount effective for initiating and enhancing a CTL response against cancer cells. The peptide continuing to the major histocompatibility complex. Also claimed is a method for inducting and enhancing a CTL response against cancer cells, involving harvesting blood leucocytes, pulsing with hTRT, and contacting cancer cells is also claimed, and involves administering a hTRT peptide to a mannel and characing and enhance cells and an enhance cells with the pulsed leucocytes. A method for targeting cTL teumour cells with the pulsed leucocytes. A method for targeting a hTRT peptide to a mannel and a server and an analysis. Vaccine for initiating and enhancing a cytotoxic T lymphocyte response, for treating cancers or tumors or for inducing immune response against tumors, comprises a telomerase reverse transcriptase peptide. "HLA-A2.1 binding motif" motif" "HLA-A2.1 binding motif" 'note= "HLA-A2.1 binding motif" motif" .942 e= "HLA-A2.1 binding /note= "HLA-A2.1 binding 1095. .1103 /note= "HLA-A2.1 binding "HLA-A2.1 binding "HLA-A2.1 binding "HLA-A2.1 binding /note= "HLA-A2.1 binding 1079. .1087 especially a cancer patient Disclosure, Fig 5; 52pp; English 15-FEB-2001; 2001WO-US005143. 15-FEB-2000; 2000US-0182685P. 1072. .1080 .1087 1122. .1130 776 966. .934 .891 (REGC) UNIV CALIFORNIA, note= /note= note= 'note= 'note= 'note= WPI; 2001-536552/59.

ö

Gaps

.. 0

ö

DB 4; Length 1132; Indela

ò g ઠે 셤 8 a ઠે В ò 셤 ò 셤 ò 셤 ઠે 요 ò a 8 g ò 셤 ò g 8 g ò 셤 ઠે ద ઠે ద ò 8

```
The invention relates to animal tissues with carbohydrate antigens that are compatible for transplantation into human patients. The mammalian cell is inactivated homozygously for expression of alpha(1,3)glactosyltransferase (alpha1,3GT) gene and comprises a transgene for alpha (1,2)-fucosyltransferase (alpha1,2FT). It is useful for producing animal tissue with carbohydrate antigens that are compatible for transplantation into human patients. The present sequence is human telomerase reverse transcriptase (TERT) used in the invention
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DARPPPAAPSFRQVSCLKELVARVLQRLCERGAKNVLAFGFALLDGARGGPFEAFTTSVR 120
                                                                                                                                                                                                                          Carbohydrate antigen; alpha(1,3)galactosyltransferase; alpha1,3GT; TERT; transgenic; alpha(1,2)fucosyltransferase; alpha1,2FT; human; enzyme;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Mammalian cells, useful for producing animal tissues with carbohydrate antigens that are compatible for transplantation into human patients.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SYLPNTVTDALRGSGAWGLILLRRVGDDVLVHLLARCALFVLVAPSCAYQVCGPPLYQLGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DARPPPAAPSERQVSCLKELVARVLQRLCERGAKAVLAFGFALLDGARGGPPEAFTTSVR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1 MPRAPRCRAVRSLIRSHYREVIPLATFVRRIGPQGWRLVQRGDPAAFRALVAQCLVCVPW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SYLPNTYTDALRGSGAWGLLLRRVGDDVLVHLLARCALFVLVAPSCAYQVCGPPLYQLGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ATOAR PPPHASGPRRIGCERAWNHSVREAGVPLGLPAPGARRRGGSASRSLPLPKRPRR
ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Length 1132;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ;
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ΩB
                                                                                                                                                                                               Human telomerase reverse transcriptase (TERT)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        100.0%; Score 5961;
larity 100.0%; Pred. No. 0;
Conservative 0; Mismatches
                                                                                                Æ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Disclosure; Page 34; 71pp; English.
                                                                                                                                                                                                                                                               telomerase reverse transcriptase.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Schiff JM,
                                                                                                                                                                                                                                                                                                                                                                                                                             21-MAR-2001; 2001US-0277811P.
                                                                                                                                                                                                                                                                                                                                                                                              21-MAR-2002; 2002WO-CA000378
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Clark AJ,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              WPI; 2002-759895/82
                                                                                                standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Best Local Similarity
Matches 1132; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                             (GERO-) GERON CORP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              N-PSDB; AAD46821.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ä
                                                                                                                                                                                                                                                                                                                              WO200274948-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence 1132
                                                                                                                                                                                                                                                                                                 Homo sapiens
                                                                                                                                                               27-JAN-2003
                                                                                                                                                                                                                                                                                                                                                              26-SEP-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Denning C,
                1081
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        181
                                                                                                AAE29226
                                                                                                                                AAE29226;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          241
                                                                  RESULT
                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                음
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1020
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           FHQQVWKNPTFFLRVISDTASLCYSILKAKNAGMSLGAKGAAGPLPSEAVQWLCHQAFLL 1080
                                                                                                                                                                                               240
                                                                                                                                                                                                                                                               300
                                                                                                                                                                                                                                                                                                                              360
                                                                                                                                                                                                                                                                                                                                                                                             420
                                                                                                                                                                                                                                                                                                                                                                                                                                                             480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           600
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          720
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          780
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          840
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           960
                                                                                                                                                                                                                                                                                                                                                           360
                                                                                                                                                                                                                                                                                                                                                                                                                             420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          720
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         780
                                                                                                                               MPRAPRCRAVRSLLRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW
                                                              DARPPPAAPSFROVSCLKELVARVLORLCERGAKNVLAFGFALLDGARGGPPEAFTTSVR
                                                                                    DARPPPAAPSFRQVSCLKELVARVLQRLCERGAKNVLAFGFALLDGARGGPPEAFTTSVR
                                                                                                                                                                                                                  ATQARPPPHASGPRRRLGCERAWNHSVREAGVPLGLPAPGARRRGGSASRSLPLPKRPRR
                                                                                                                                                                                                                                                               GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG
                                                                                                                                                                                                                                                                                            GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG
                                                                                                                                                                                                                                                                                                                            ROHHAGPPSTSRPPRPWDTPCPPVYAETKHFLYSSGDKEQLRPSFLLSSLRPSLTGARRL
                                                                                                                                                                                                                                                                                                                                               PAAGVCAREKPQGSVAAPEEEDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RHNERRFLRNTKKFISLGKHAKLSLQELTWKMSVRDCAWLRRSPGVGCVPAAEHRLREEI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            LAKFLHWLMSVYVVELLRSFFYVTETTFQKNRLFFYRKSVWSKLQS1G1RQHLKRVQLRE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LAKFLHWLMSVYVVELLRSFFYVTETTFQKNRLFFYRKSVWSKLQSIGIRQHLKRVQLRE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             LSEABVROHREARPALLTSRLRFIPKPDGLRPIVNMDYVVGARTFRREKRAERLTSRVKA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LSEAEVRQHREARPALLTSRLRFIPKPDGLRPIVNMDYVVGARTFRREKRAERLTSRVKA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            LFSVLNYERARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDPPELYFVKVDVTGAYDTI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PQDRLTEVIASIIKPQNTYCVRRYAVVQKAAHGHVRKAFKSHVSTLTDLQPYMRQFVAHL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PÓDRLTEVIASIIKPONTYCVRRYAVVOKAAHGHVRKAFKSHVSTLTDLOPYMRQFVAHL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          QETSPLEDAVVIEQSSSLNEASSGLFDVFLRFMCHHAVRIRGKSYVQCQGIPQGSILSTL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  QETSPLRDAVVIEQSSSLNEASSGLFDVFLRFMCHHAVRIRGKSYVQCQGIPQGSILSTL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           LCSLCYGDMENKLFAGIRRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPBYGCVVNL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            FHQQVWKNPTFFLRVISDTASLCYSILKAKNAGMSLGAKGAAGPLPSEAVQWLCHQAFLL
 MPRAPRCRAVRSLLRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW
                                                                                                                                                                                             ATQARPPHASGPRRILGCERAWNHSVREAGVPLGLPAPGARRRGGSASRSLPLPKRPRR
                                                                                                                                                                                                                                                                                                                                                                                              VETIFLGSRPWMPGTPRRLPRLPQRYWQMRPLFLELLGNHAQCPYGVLLKTHCPLRAAVT
                                                                                                                                                                                                                                                                                                                                                                                                                                                               PAAGVCAREKPQGSVAAPEEEDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RHNERR FLRNTKKFISLGKHAKLSLQELTWKMSVRDCAWLRRSPGVGCVPAAEHRLREEI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           LFSVLNYERARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDPPPELYFVKVDVTGAYDTI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RKTVVNFPVEDEALGGTAFVQMPAHGLFPWCGLLLDTRTLEVQSDYSSYARTSIRASLTF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1081 KLTRHRVTYVPLLGSLRTAQTQLSRKLPGTTLTALEAAANPALPSDFKTILD 1132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           841
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1021
                                                                  61
                                                                                                                                                               121
                                                                                                                                                                                               181
                                                                                                                                                                                                                             181
                                                                                                                                                                                                                                                                                                241
                                                                                                                                                                                                                                                                                                                                                             301
                                                                                                                                                                                                                                                                                                                                                                                                                             361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          721
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         721
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           781
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           841
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           901
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           901
                                                                                                                               121
                                                                                                                                                                                                                                                               241
                                                                                                                                                                                                                                                                                                                              301
                                                                                                                                                                                                                                                                                                                                                                                              361
                                                                                                                                                                                                                                                                                                                                                                                                                                                             421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          781
```

ö

120

9

300

Ξ.

Wancewicz

SM,

Freier

12

```
16-MAY-2000; 2000US-00572423.
07-DEC-2000; 2000US-00733294.
                                                                            (ISIS-) ISIS PHARM INC
                                                                                           Gaarde WA,
                                                                                                         2002-075321/10.
                                                                                                         WPI; 2002-075321/
N-PSDB; AAS96607
                                                                                                                                                                                                                                                                                                                      Sequence 1132 AA;
           WO200188198-A1
                                        15-MAY-2001;
                         22-NOV-2001
                                                                                                                                                                                                                                                                                                                                            Best Local Sim
Matches 1132;
                                                                                           Monia BP,
                                                                                                                                                                                                                                                                                                        invention
                                                                                                                                                                                                                                                                                                                                                                  н
                                                                                                                                                                                                                                                                                                                                    Query Match
                                                                                                                                                                                                                                                                                                                                                                                              61
                                                                                                                                                                                                                                                                                                                                                                                                            61
                                                                                                                                                                                                                                                                                                                                                                                                                           121
                                                                                                                                                                                                                                                                                                                                                                                                                                                         181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      241
   g
                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                  ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                        ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                        ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                  1020
                                                                                                                                                                                                                                                                                                                                                                1020
                                                                                                                                                                                                                                                                                                                                                                                             1080
                                                                                                                                                                                                                                                                                                                                                                             FHQQVWKNPTFFLRVISDTASLCYSILKAKNAGMSLGAKGAAGPLPSEAVQWLCHQAFLL 1080
                                              420
GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG 300
                                                             420
                                                                           480
                                                                                         480
                                                                                                                                      900
                                                                                                                                                     600
                                                                                                                                                                    999
                                                                                                                                                                                  9
                                                                                                                                                                                                 720
                                                                                                                                                                                                                             780
                                                                                                                                                                                                                                                           840
                                                                                                                                                                                                                                                                         840
                                                                                                                                                                                                               720
                                                                                                                                                                                                                                            780
                                                                                                                                                                                                                                                                                         900
                                                                                                                                                                                                                                                                                                                     960
                                                                                                                                                                                                                                                                                                                                   960
               RQHHAGPPSTSRPPRPWDTPCPPVYAETKHFLYSSGDKBQLRPSFLLSSLRPSLTGARRL
                         VETI FLGSR PWMPGTPRRLPRLPQRYWQMRPLFLELLGNHAQCPYGVLLKTHCPLRAAVT
                                                    PAAGVCAREKPQGSVAAPEEEDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS
                                                                                   LAKFLHWLMSVYVVELLRSFFYVTETTFQKNRLFFYRKSVWSKLQSIGIRQHLKRVQLRE
                                                                                                                                           LSEAEVROHREARPALLTSRLRFIPKPDGLRPIVNMDYVVGARTFRREKRAERLTSRVKA
                                                                                                                                                                          PQDRLTEVIASIIKPQNTYCVRRYAVVQKAAHGHVRKAFKSHVSTLTDLQPYMRQFVAHL
                                                                                                                                                                                                                                    LFSVLNYERARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDPPPELYFVKVDVTGAYDTI
                                                                                                                                                                                                        LFSVLNYERARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDPPPELYFVKVDVTGAYDTI
                                                                                                                                                                                                                                                        QETSPLRDAVVIEQSSSLNEASSGLFDVFLRFMCHHAVRIRGKSYVQCQGIPQGSILSTL
                                                                                                                                                                                                                                                                NRGFKAGRNMRRKLFGVLRLKCHSLFLDLQVNSLQTVCTNIYKILLLQAYRFHACVLQLP
                                                                                                      RHNERRFLRNTKKFISLGKHAKLSLQELTWKMSVRDCAWLRRSPGVGCVPAAEHRLREEI
                                                                                                                                                                                                                                                                                     LCSLCYGDMENKLFAGIRRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGCVVNL
                                                                                                                                                                                                                                                                                                                  RKTVVNFPVEDEALGGTAFVQMPAHGLFPWCGLLLDTRTLEVQSDYSSYARTSIRASLTF
                                                                                                                                                                                                                                                                                                                            NRGFKAGRNMRRKLFGVLRLKCHSLFLDLQVNSLQTVCTNIYKILLLQAYRFHACVLQLP
                                                                                                                                                                                                                                                                                                                                                                                          FHQQVWKNPTFFLRVISDTASLCYSILKAKNAGMSLGAKGAAGPLPSEAVQWLCHQAFLL
                                                                                                                                                                                                                                                                                                                                                                                                            1132
                                                                                                                                                                                                                                                                                                                                                                                                                  KLTRHRVTYVPLLGSLRTAQTQLSRKLPGTTLTALEAAANPALPSDFKTILD
                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ź
                                                                                                                                                                                                                                                                                                                                                                                                                                                            AAU72735 standard; protein; 1132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          09-APR-2002
               301
                              301
                                            361
                                                          361
                                                                         421
                                                                                       121
                                                                                                      481
                                                                                                                    481
                                                                                                                                   541
                                                                                                                                                  541
                                                                                                                                                                 601
                                                                                                                                                                               601
                                                                                                                                                                                                            661
                                                                                                                                                                                                                                                                                                                                 901
                                                                                                                                                                                                                                                                                                                                                                                           1021
                                                                                                                                                                                              661
                                                                                                                                                                                                                                         721
                                                                                                                                                                                                                                                                       781
                                                                                                                                                                                                                                                                                      841
                                                                                                                                                                                                                                                                                                                  901
                                                                                                                                                                                                                                                                                                                                                             961
                                                                                                                                                                                                                                                                                                                                                                            1021
                                                                                                                                                                                                                                                                                                                                                                                                          1081
                                                                                                                                                                                                                                                                                                                                                                                                                       1081
                                                                                                                                                                                                                           721
                                                                                                                                                                                                                                                        781
                                                                                                                                                                                                                                                                                                                                               961
                                                                                                                                                                                                                                                                                                                                                                                                                                              RESULT 12
AAU72735
                                                         셤
                                                                                                                   요
               ઠે
                             셤
                                           ò
                                                                        ò
                                                                                     d
                                                                                                    ò
                                                                                                                                   ò
                                                                                                                                              엄
                                                                                                                                                                              g
                                                                                                                                                                                                          a
                                                                                                                                                               ò
                                                                                                                                                                                             ò
                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                     ð
                                                                                                                                                                                                                                                                                                ద
                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                            ð
                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                         ठ
                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                             SXXXXXXXXXXX
```

```
The invention describes a compound, 8-50 nucleobases in length targeted to a nucleic acid molecule encoding human TERT (telomerase reverse transcriptase), where the compound specifically hybridises with and inhibits the expression of TERT. A series of oligonucleotides were conclectides in length and composed of a central gap region consisting of the 2'-deoxynucleotides, flanked on both sides (5' and 3' directions) by five-nucleotide wings. The wings were composed of 2'-methoxyethyl (2'-KDE) nucleotides. The compounds were composed of 2'-methoxyethyl (2'-KDE) nucleotides. The compounds were analysed for their effect on human CC TERT mRNA levels by reverse transcriptase (RT) polymerase chain reaction (PCR). The compound is useful for inhibiting the expression of TERT in CPCR). The compound is useful for inhibiting the expression of TERT in CPCR). The states of the transcriptase and therapeutics. This is the amino acid sequence of human CC diagnostics and therapeutics. This is the amino acid sequence of human continuations.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ROHHAGPPSTSRPPRPWDTPCPPVYAETKHFLYSSGDKEQLRPSFLLSSLRPSLTGARRL 360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         60
New compound targeted to nucleic acid molecule encoding telomerase transcriptase (TERT), which specifically hybridizes with and inhibits expression of TERT, useful for modulating apoptosis and inhibiting cell
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GAAPEPERTPVGGGSWAHPGRIRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             MPRAPRCRAVRSLLRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1 MPRAPRCRAVRSLIRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DARPPPAAPSFRQVSCLKELVARVLQRLCERGAKNVLAFGFALLDGARGGPPEAFTTSVR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SYLPNTVTDALRGSGAWGLLLRRVGDDVLVHLLARCALFVLVAPSCAYQVCGPPLYQLGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ATQARPPHASGPRRRLGCERAWNHSVREAGVPLGLPAPGARRRGGSASRSLPLPKRPRR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Length 1132;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DB 5;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ;
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              100.0%; Score 5961;
larity 100.0%; Pred. No. 0;
Conservative 0; Mismatches
                                                                                                                                            Disclosure; Page 100-105; 154pp; English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
```

VETIFLGSRPWMPGTPRRLPRLPQRYWQMRPLFLELLGNHAQCPYGVLLKTHCPLRAAVT 420

361

ò

Telomerase reverse transcríptase, TERT, cytostatic, apoptosis, cell growth inhibitor, antisense oligonucleotide, antisense technology.

sapiens

Ношо

Human telomerase reverse transcriptase (TERT).

```
RHNERRFLRNTKKFISLGKHAKLSLQELTWKMSVRDCAWLRRSPGVGCVPAAEHRLREEI 540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SYLPNITYIDALRGSGAWGLLLRRVGDDVLVHLLARCALFVLVAPSCAYQVCGPPLYQLGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RQHHAGPPSTSRPPRPWDTPCPPVYAETKHFLYSSGDKEQLRPSFLLSSLRPSLTGARRL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DARPPPAAPSFRQVSCLKELVARVLORLCERGAKNVLAFGFALLDGARGGPPEAFTTSVR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DARPPPAAPSFRQVSCLKELVARVIORLCERGAKOVVLAFGFALLDGARGGPPEAFTTSVR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SYLPNTVTDALRGSGAWGLLLRRVGDDVLVHLLARCALFVLVAPSCAYQVCGPPLYQLGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PAAGYCAREKPOGSVAAPEEEDTDPRRLVOLLRQHSSPWQYYGFVRACLRRLVPPGLWGS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MPRAPRCRAVRSLLRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GAAPEPERTPVGOGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ROHHAGPPSTSRPPRPWDTPCPPVYAETKHFLYSSGDKEOLRPSFLLSSLRPSLTGARRL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       VETI FLGSR PWMPGTPRRLPRLPQRYWQMRPLFLELLGNHAQCPYGVLLKTHCPLRAAVT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PAAGVCAREKPQGSVAAPEEEDŢDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS
                                                                                                                                                                                                                                                                                                                                                                                                                           Best Local Similarity 100.0%; Score 5961; Best Local Similarity 100.0%; Pred. No. 0; Matches 1132; Conservative 0; Mismarches
                                                                      (UYRP ) UNIV ROCHESTER
                                                                                                                     WPI; 2003-403336/38
                                                                                                                                                                                                                                                                                                                                                                                                           Sequence 1132 AA;
                                                                                                                                   N-PSDB; ACC58039
                                                                                                                                                                                         transcriptase.
                       22-OCT-2001;
20-FEB-2002;
22-MAY-2002;
                                                                                              Ε.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Н
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             421
                                                                                               Rowley
  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1020
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1020
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1080
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1080
                                                                                                                                                                                                                                                 720
                                   480
                                                                                                                                9
                                                                                                                                                      600
                                                                                                                                                                              99
                                                                                                                                                                                                     99
                                                                                                                                                                                                                             720
                                                                                                                                                                                                                                                                            780
                                                                                                                                                                                                                                                                                                  780
                                                                                                                                                                                                                                                                                                                          840
                                                                                                                                                                                                                                                                                                                                                                       900
                                                                                                                                                                                                                                                                                                                                                                                               900
                                                                                                                                                                                                                                                                                                                                                                                                                      960
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Telomerase reverse transcriptase; TERT; enzyme; RNA interference; short interfering RNA; siRNA; cancer; tumour; cytostatic; contraceptive; immunosuppressive; antiinfertility; fungicide; antiparasitic; antiinflammatory; human; gene therapy.
PAAGYCAREKPOGSVAAPEEEDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS
                                                                                                                                              PQDRLTEVIASIIKPQNTYCVRRYAVVQKAAHGHVRKAFKSHVSTLTDLQPYMRQFVAHL
                                                                                                                                                                                                                                                                                        PQDRLTEVIASIIKPONTYCVRRYAVVQKAAHGHVRKAFKSHVSTLTDLQPYMRQFVAHL
                                                                                                                                                                                                                                                                                                                                      LCSLCYGDMENKLFAGIRRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGCVVNL
                                                                                                                                                                                                                                                                                                                                                                                                                                  NRGFKAGRNMRRKLFGVLRLKCHSLFLDLQVNSLQTVCTNIYKILLLLQAYRFHACVLQLP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FHQQVWKNPTFFLRVISDTASLCYSILKAKNAGMSLGAKGAAGPLPSEAVQMLCHQAFLL
                                   PAAGVCAREKPQGSVAAPEEEDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS
                                                                                 RHNERRFLRNTKKFISLGKHAKLSLQELTWKMSVRDCAWLRRSPGVGCVPAAEHRLREEI
                                                                                                RINERRFIERNTKKFISLGKHAKLSLOELTWKMSVRDCAWLRRSPGVGCVDAAEHRLREEI
                                                                                                                               LAKFLHWLMSVYVVELLRSFFYVTETTFQKNRLFFYRKSVWSKLQSIGIRQHLKRVQLRE
                                                                                                                                                                             LSEAEVRQHREARPALLTSRLRFIPKPDGLRPIVNMDYVVGARTFRREKRAERLTSRVKA
                                                                                                                                                                                                                                                  LFSVLNYERARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDPPPELYFVKVDVTGAYDTI
                                                                                                                                                                                                                                                                                                                                                                                                                      RKTVVNFPVEDEALGGTAFVQMPAHGLFPWCGLLLDTRTLEVQSDYSSYARTSIRASLTF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NRGFKAGRNMRRKLFGVLRLKCHSLFLDLQVNSLQTVCTNIYKILLLQAYRFHACVLQLP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    FHQQVWKNPTFFLRVISDTASLCYSILKAKNAGMSLGAKGAAGPLPSEAVQWLCHQAFLL
                                                                                                                                                                                                                            LFSVLNYERARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDPPPELYFVKVDVTGAYDTI
                                                                                                                                                                                                                                                                                                                        QETSPLRDAVVIEQSSSLNEASSGLFDVFLRFMCHHAVRIRGKSYVQCQGIPQGSILSTL
                                                                                                                                                                                                                                                                                                                                                                      LCSLCYGDMENKLFAGIRRDGILLRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGCVVNI.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 KLTRHRVTYVPLLGSLRTAQTQLSRKLPGTTLTALEAAANPALPSDFKTILD 1132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               KLTRHRVTYVPLLGSLRTAQTQLSRKLPCTTLTALEAAANPALPSDFKTILD 1132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Human telomerase reverse transcriptase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Ŕ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ABR42384 standard; protein; 1132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                WO2003035667-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  11-AUG-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         01-MAY-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1021
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1021
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1081
                                   421
                                                        421
                                                                                481
                                                                                                       481
                                                                                                                                541
                                                                                                                                                      541
                                                                                                                                                                                                     601
                                                                                                                                                                                                                                                                                                                                                                                                                                              901
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     196
             361
                                                                                                                                                                              601
                                                                                                                                                                                                                             661
                                                                                                                                                                                                                                                   661
                                                                                                                                                                                                                                                                            721
                                                                                                                                                                                                                                                                                                  721
                                                                                                                                                                                                                                                                                                                          781
                                                                                                                                                                                                                                                                                                                                                781
                                                                                                                                                                                                                                                                                                                                                                       841
                                                                                                                                                                                                                                                                                                                                                                                                                      901
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             961
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ABR42384
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RESULT
                                                       셤
                                                                                ò
                                                                                                     g
                                                                                                                               ઠે
                                                                                                                                                 셤
                                                                                                                                                                           8
                                                                                                                                                                                                  셤
                                                                                                                                                                                                                             ઠ
                                                                                                                                                                                                                                               요
                                                                                                                                                                                                                                                                           ઠે
                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                       ઠે
                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                      ઠે
                                                                                                                                                                                                                                                                                                                                                                                              유
                                                                                                                                                                                                                                                                                                                                                                                                                                          a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                    ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
```

120

9

ö

Length 1132; Indels

9 ö 8

180

180

240

300 300 360 360

```
The present sequence is the protein sequence of human telomerase reverse transcriptase (TERT). The invention relates to the discovery that double-strands interfering RNAs, such as short interfering RNAs (siRNA), which target telomerase RNA or TERT mRNA are capable of inhibiting telomerase activity. Inhibition of telomerase in cancer cells leads to telomerase shortening, end-to-end chromosomal fusion, and apoptosis. Interference of telomerase activity can also be used for treatment of infertility, for contraception or sterilisation, for immunosuppression, for treatment of yeast, parasite and fungal infections, and in antiinflammatory therapies. As telomerase is active in a limited number of cell types, e.g. tumour cells, germline cells, certain stem cells of the haematopoietic system, 7 and 8 cells, sun-damaged skin, and proliferative cervix, most normal cells are not affected by telomerase RNA interference therapy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Novel double-stranded short interfering RNA having sense and antisense nucleic acids which are complementary to each other and to target nucleic acid e.g., telomerase RNA or mRNA encoding telomerase reverse
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Disclosure; Fig 4; 37pp; English
                                                                                                            2001US-0345326P.
2002US-0359196P.
2002US-0383195P.
16-OCT-2002; 2002WO-US033065
```

ò d à 셤 ò 셤 ð 셤 ò 셤 ò 요 ò g

```
The present sequence is that of human telomerase reverse transcriptase (TERT). The invention relates to the discovery that double-stranded interfering RNAs, such as short interfering RNAs (SIRNA), which target telomerase RNA or TERT mRNA are capable of inhibiting telomerase activity. Inhibition of telomerase in cancer calls leads to telomera shortening, end-to-end chromosomal fusion, and apoptosis. Interference of telomerase activity can also be used for treatment of infartility, for contraception or sterilisation, for immunosuppression, for treatment of yeast, parasite and fungal infections, and in antiinflammatory therapies. As telomerase is active in a limited number of call types, e.g. tumour cells, germline calls, certain stem cells of the haematopoietic system, T and B cells, sun-damaged skin, and proliferative cervix, most normal cells are not affected by telomerase RNA interference therapy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 9
                                                                                Novel nucleic acid encoding or comprising interfering RNAs which target telomerase RNA, useful for inhibiting telomerase activity for treating cancer, infertility and disorders of the immune system.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ATQARPPPHASGPRRRLGCERAWNHSVREAGVPLGLPAPGARRGGSASRSLPLPKRPRR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DARPPPAAPSFRQVSCLKELVARVLQRLCERGAKNVLAFGFALLDGARGGPPEAFTTSVR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DARPPPAAPSFRQVSCLKELVARVLQRLCERGAKNVLAFGFALLDGARGGPPEAFTTSVR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SYLPNTVTDALRGSGAWGLLLRRRVGDDVLVHLLARCALFVLVAPSCAYQVCGPPLYQLGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ATQARPPHASGPRRRLGCERAWNHSVREAGVPLGLPAPGARRRGGSASRSLPLPKRPRR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              MPRAPRCRAVRSLLRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ROHHAGPPSTSRPPRPWDTPCPPVYAETKHFLYSSGDKEQLRPSFLLSSLRPSLTGARRL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   LAKFLHWLMSVYVVELLRSFFYVTETTFQKNRLFFYRKSVWSKLQSIGIRQHLKRVQLRE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      VETIFLGSRPWMPGTPRRLPRLPQRYWQMRPLFLELLGNHAQCPYGVLLKTHCPLRAAVT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        361 VETIFLGSRPWMPGTPRRLPRLPQRYWQMRPLFLELLGNHAQCPYGVLLKTHCPLRAAVT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PAAGVCAREKPQGSVAAPEEEDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       421 PAAGVCAREKPQGSVAAPEEEDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LAKFLHWLMSVYVVELLRSFFYVTETTFQKNRLFFYRKSVWSKLQSIGIRQHLKRVQLRE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        LSEAEVRQHREARPALLTSRLRFIPKPDGLRPIVNMDYVVGARTFRREKRAERLTSRVKA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        RHNERRFLRNTKKFISLGKHAKLSLQELTWKMSVRDCAWLRRSPGVGCVPAAEHRLREEI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                          ö
                                                                                                                                                                                                                                                                                                                                                                                                             Length 1132,
                                                                                                                                                                                                                                                                                                                                                                                                                                          Indels
                                                                                                                                                                                                                                                                                                                                                                                                             DB 6;
                                                                                                                                                                                                                                                                                                                                                                                                                                        .;
0
                                                                                                                                                                                                                                                                                                                                                                                                        100.0%; Score 5961;
100.0%; Pred. No. 0;
ive 0; Mismatches
                                                                                                                                           Disclosure; Fig 4; 52pp; English
                                                                                                                                                                                                                                                                                                                                                                                                                      Best Local Similarity 100
Matches 1132, Conservative
                                       WPI; 2003-403289/38
                                                                                                                                                                                                                                                                                                                                                                             Sequence 1132 AA;
                                                       N-PSDB; ACC57552
            PT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               121
                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        601
            Rowley
          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      8
                                                                                                                                                                                                                                                                                                                                                                                                                                                               1020
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1020
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1080
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1080
                                                   600
                                                                               900
                                                                                                            999
                                                                                                                                      099
                                                                                                                                                                     720
                                                                                                                                                                                                720
                                                                                                                                                                                                                             780
                                                                                                                                                                                                                                                         780
                                                                                                                                                                                                                                                                                       840
                                                                                                                                                                                                                                                                                                                 840
                                                                                                                                                                                                                                                                                                                                              900
                                                                                                                                                                                                                                                                                                                                                                          900
                                                                                                                                                                                                                                                                                                                                                                                                       960
                                                                                                                                                                                                                                                                                                                                                                                                                                  960
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Telomerase reverse transcriptase; TERT: enzyme; RNA interference; short interfering RNA; siRNA; cancer; tumour; cytostatic; contraceptive; immunosuppressive; antiinfertility; fungicide; antiparasitic; antiinflammatory; human; gene therapy.
                                                              LSEAEVROHREARPALLTSRLRFIPKPDGLRPIVNMDYVVGARTFRREKRAERLTSRVKA
                                                                                                                       LFSVLNYERARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDPPFELYFVKVDVTGAYDTI
                                                                                                                                                                               PQDRLTEVIASIIKPQNTYCVRRYAVVQKAAHGHVRKAFKSHVSTLTDLQPYMRQFVAHL
                                                                                                                                                                                                                                         PODRLTEVIASIIKPONTYCVRRYAVVQKAAHGHVRKAFKSHVSTLTDLQPYMRQFVAHL
                                                                                                                                                                                                                                                                                                   LCSLCYGDMENKLFAGIRRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGCVVNL
                                                                                                                                                                                                                                                                                                                                                          QETSPLRDAVVI EQSSSLNEASSGLFDVFLRFMCHHAVRIRGKSYVQCQGI PQGSILSTL
                                                                                                                                                                                                                                                                                                                                                                                                                                                         nrgfkagrnmrrklfgvlrlkchslfldlqvnslqtvctni yki llllqayrfhacvlqlp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  FHQQVWKNPTFFLRVISDTASLCYSILKAKNAGMSLGAKGAAGPLPSEAVQWLCHQAFLL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RKTVVNFPVEDEALGGTAFVQMPAHGLFPWCGLLLDTRTLEVQSDYSSYARTSIRASLTF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            KLTRHRVTYVPLLGSLRTAQTQLSRKLPGTTLTALEAAANPALPSDFKTILD 1132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           LAKFLHWLMSVYVVELLRSFFYVTETTFQKNRLFFYRKS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Human telomerase reverse transcriptase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Ź
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2001US-0345326P.
2002US-0359196P.
2002US-0383195P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           16-OCT-2002; 2002WO-US033146
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (UYRP ) UNIV ROCHESTER
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ABR42063 standard,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  WO2003034985-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       20-FEB-2002;
22-MAY-2002;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        22-OCT-2001;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     28-JUL-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 01-MAY-2003
                                                                          541
                                                                                                    601
                  481
                                             541
                                                                                                                                 601
                                                                                                                                                                199
                                                                                                                                                                                          661
                                                                                                                                                                                                                       721
                                                                                                                                                                                                                                                  721
                                                                                                                                                                                                                                                                                                             781
                                                                                                                                                                                                                                                                                                                                          841
                                                                                                                                                                                                                                                                                                                                                                                                 901
                                                                                                                                                                                                                                                                                                                                                                                                                                                           196
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      961
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1021
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1021
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1081
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1081
                                                                                                                                                                                                                                                                                 781
                                                                                                                                                                                                                                                                                                                                                                                                                               901
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ABR42063
```

a

ò

g

ò 유 ò

Thu

```
61
                                                                                                                                                                                                                                                                                                                                                121
                                                                                                                                                                                                                                                                                                                                                                 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                     301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              601
                                                                                                                                                                                                                                                                                               61
                                                                                                                                                                                                                                                                                                                               121
                                                                                                                                                                                                                                                                                                                                                                                  181
                                                                                                                                                                                                                                                                                                                                                                                                    241
                                                                                                                                                                                                                                                                                                                                                                                                                    241
                                                                                                                                                                                                                                                                                                                                                                                                                                    301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              601
ð
                                                                                                                                                                                                                                                                            요
                                                                                                                                                                                                                                                                                             ઠે
                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                               임
                                                                                                                                                                                                                                                                                                                                                                                                    à
                                                                                                                                                                                                                                                                                                                                                                                                                 엄
                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ઠ
                                                                                                                                                                                                           1020
                                                                                                                                                                                                                            1080
                                                                                                                                                                                         1020
                                                                                                                                                                                                                                            1080
                                                   780
                                                                   780
                                                                                     840
                                                                                                                     900
                                                                                                                                      900
                                                                                                                                                       960
                                 720
                                                                                                                                                                        960
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Composition for treating wounds and enhancing epithelization of a skin surface, comprises vector encoding telomerase reverse transcriptase or telomerized epithelial cells on a microparticle or a matrix.
                                                                                                                    LSEAEVRQHREARPALLTSRLRF1PKPDGLRP1VNMDYVVGARTFRREKRAERLTSRVKA
                          PQDRLTEVIASIIKPQNTYCVRYAVVQKAAHGHVRKAFKSHVSTLTDLQPYMRQFVAHL
                                                                                              RKTVVNFPVEDEALGGTAFVQMPAHGLFPWCGLLLDTRTLEVQSDYSSYARTSIRASLTF
                                                                                                                                                                                         NRGFKAGRNMRRKLFGVLRLKCHSLFLDLQVNSLQTVCTNIYKILLLQAYRFHACVLQLP
                                                                                                                                                                                                   NRGFKAGRNMRRKLFGVIRLKCHSIFIDLOVNSLQTVCTNIYKILLLQAYRFHACVLQIP
                                                                                                                                                                                                                           FHQQVWKNPTFFLRVISDTASLCYSILKAKNAGMSLGAKGAAGPLPSEAVQWLCHQAFLL
                                                                                                                                                                                                                                     FHQQVWKNPTFFLRVISDTASLCYSIIKAKNAGMSLGAKGAAGPLPSEAVQWLCHQAFLL
                                                   PODRLTBVIASIIKPONTYCVRRYAVVQKAAHGHVRKAFKSHVSTLTDLQPYMRQFVAHL
                                                                                    QETSPLRDAVVIEQSSSLNEASSGLFDVFLRFMCHHAVRIRGKSYVQCQGIPQGSILSTL
                                                                                                                                                       RKTVVNFPVEDEALGGTAFVQMPAHGLFPWCGLLLDTRTLEVQSDYSSYARTSIRASLTF
                                                                                                                                                                                                                                                                                                                                                                                           ŝ
                LFSVLNYERARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDPPPELYFVKVDVTGAYDTI
                                                                                                                                                                                                                                                                                                                                                                                         Human; telomerase reverse transcriptase; enzyme; hTERT; chromosome vulnerary; antiulcer; epithelial cell migration promoter; wound; epithelisation; skin wound; lesion; burn; surgical incision; ulcer; epithelial cell; keratinocyte; epidermal; mucosal.
                                                                                                                                                                                                                                                                     KLTRHRVTYVPLLGSLRTAQTQLSRKLPGTTLTALEAAANPALPSDFKTILD 1132
                                                                                                                                                                                                                                                                                                                                                                          Human telomerase reverse transcriptase protein SEQ ID NO:2.
                                                                                                                                                                                                                                                                                                                        Ę.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Disclosure; Page 32; 68pp; English
                                                                                                                                                                                                                                                                                                                        protein; 1132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       09-MAY-2002; 2002WO-US014867
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       09-MAY-2001; 2001US-0289903P
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Harley
                                                                                                                                                                                                                                                                                                                                                        (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           WPI; 2003-120591/11.
                                                                                                                                                                                                                                                                                                                        standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (GERO-) GERON CORP.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Chiu C,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   N-PSDB; ABZ22474
                                                                                                                                                                                                                                                                                                                                                                                                                                                     WO200291999-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                     Homo sapiens
                                                                                                                                                                                                                                                                                                                                                        25-MAR-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      21-NOV-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Jiang X,
                                                 721
                                                                                                                     841
                                                                                                                                      841
                                                                                                                                                       901
                                                                                                                                                                        901
                                                                                                                                                                                                          961
                                                                                                                                                                                                                           1021
                                                                                                                                                                                                                                                            1081
                                                                                                                                                                                                                                                                            1081
                                                                                                                                                                                                                                                                                                                                        ABP56676;
601
                 199
                                  661
                                                                   721
                                                                                    781
                                                                                                    781
                                                                                                                                                                                         196
                                                                                                                                                                                                                                            1021
                                                                                                                                                                                                                                                                                                                        ABP56676
                                                                                                                                                                                                                                                                                                       RESULT 15
                                  셤
                                                                 셤
                                                                                                  d
                                                                                                                    ð
                                                                                                                                    쉽
                                                                                                                                                      ð
                                                                                                                                                                       셤
                                                                                                                                                                                         ò
                                                                                                                                                                                                          셤
                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                       ò
                                                 ò
                                                                                    δ
                                                                                                                                                                                                                                                            8
                                                                                                                                                                                                                                                                            셤
```

```
an excipient or device, or comprises telomerised epithelial cells on a microparticle or a matrix suitable for topical administration or amerize suitable for topical administration or amerize suitable for topical administration or administration to a wound site. (I) has viblerary and antiulcer administration to a wound site. (I) has viblerary and antiulcer activities and can be used to promote epithelial cell migration. (I) is useful for treating a wound and enhancing epitheliation of a skin a urface. The wound is especially skin wound including acute lesion such as traumatic lesion, burn, or surgical including acute lesion such as traumatic lesion, burn, or surgical inclusion, chronic lesion such as chronic venous ulcer, diabetic ulcer or compression ulcer and the wound is further monitored for closure. The telomerase activity or TERT is treatment of also in fibroblants or endothelial cells at the site of treatment. The epithelial cells are especially keratinocytes. A polymuclectide encoding TERT is useful for the preparation of a medicament for the treatment of a wound or an epithelial surface in a human or animal. An epithelial cell with increased telomerase activity or increased expression of TERT is useful for preparation of a medicament for the treatment of a wound in a human or animal. (I) is also useful for treating wounds of other conservations of encoding account or animal surfaces including mucosal surfaces such as bronchus, mouth, human mean than the surface of the presents and the surface of the p
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      600
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               RQHHAGPPSTSRPPRPWDTPCPPVYAETKHFLYSSGDKEQLRPSFLLSSLRPSLTGARRL 360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   600
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        nose, oesophagus, stomach, or intestine. The present sequence represents human TERT (hTERT), which is given in the exemplification of the present invention. hTERT is located to chromosome 5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SYLPNIVTDALRGSGAWGLLLRRVGDDVLVHLLARCALFVLVAPSCAYQVCGPPLYQLGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LSEAEVROHREARPALLISRIRFIPKPDGLRPIVMMDYVVGARIFRREKRAERLISRVKA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1 MPRAPRCRAVRSLIRSHYREVLPLATFVRRLGPQGWRLVQRGDPAFRALVAQCLVCVPW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DARPPPAAPSFRQVSCLKELVARVLQRLCERGAKNVLAFGFALLDGARGGPPEAFTTSVR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               VETI FLGSRPWMPGTPRRLPRLPQRYWQMRPLFLELLGNHAQCPYGVLLKTHCPLRAAVT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PAAGVCAREKPQGSVAAPEEEDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RHNERRFLRNTKKFISLGKHAKLSLQELTWKMSVRDCAWLRRSPGVGCVPAAEHRLREEI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       LAKFLHWLMSVYVVELLRSFFYVTETTFQKNRLFFYRKSVWSKLQSIGIRQHLKRVQLRE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   MPRAPRCRAVRSLLRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SYLPNTVTDALRGSGAWGLLLRRVGDDVLVHLLARCALFVLVAPSCAYQVCGPPLYQLGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ATOAR PPPHASGPRRRLGCERAWNHSVREAGVPLGLPAPGARRRGGSASRSLPLPKRPRR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PAAGVCAREKPOGSVAAPEEEDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               RHNERRFLRNTKKFISLGKHAKLSLQELTWKMSVRDCAWLRRSPGVGCVPAAEHRLREEI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          LAKFLHWLMSVYVVELLRSFFYVTETTFQKNRLFFYRKSVWSKLQSIGIRQHLKRVQLRE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             LSEAEVROHREARPALLTSRLRFIPKPDGLRPIVNMDYVVGARTFRREKRAERLTSRVKA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      VETI FLGSR PWMPGT PRRLPRLPQRYWQMR PLFLELLGNHAQCPYGVLLKTHCPLRAAVT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
present invention describes a pharmaceutical composition (I)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ,0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length 1132;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    . 9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                100.0%; Score 5961;
100.0%; Pred. No. 0;
iive 0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
Best Local Similarity 100.
Matches 1132; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sequence 1132 AA;
```

```
ö
                                                                                                                                                                                                                                                                                                                                                                       240
                             enhance replicative
                                                                                                                                                                                                                                                                              120
                                                                                                                                                                                                                                                                                                   120
                                                                                                                                                                                                                                                                                                                            180
                                                                                                                                                                                                                                                                                                                                                 180
                                                                                                                                                                                                                                                                                                                                                                                               240
                                                                                                                                                                                                                                                                                                                                                                                                                      300
                                                                                                                                                                                                                                                                                                                                                                                                                                            300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           600
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       099
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    720
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           720
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  780
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             QETSPLRDAVVIEQSSSLNEASSGLFDVFLRFMCHHAVRIRGKSYVQCQGIPQGSILSTL 840
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             9
                                                                                                                                                                                                                                                    9
The invention relates to the generation of primary preadipocyte cell strains that expresse telomerase reverse transcriptase (TERT- the catalytic subunit of telomerase), and maintain and/or enhance replicative potential and maintain adipogenic capacity of the cell. This sequence represents the TERT protein. The cell strain can be used in research to study all aspect of adipogenesis, especially in relation to researching treatments for e.g. obesity. The cell can also be used to identify adipogenesis modulators for use as therapeutic agents such as hormones, growth factors, cytokines, enzymes, cholesterol binding proteins, cholesterol removing proteins or their combinations. Alternatively, the therapeutic agent may be an adipocytokine, preferably adiponectin, or
                                                                                                                                                                                                                                                                                        DARPPAAPSFROVSCLKELVARVLORLCERGAKNVLAFGFALLDGARGGPPEAFTTSVR
                                                                                                                                                                                                                                                                                                                        SYLPNTVTDALRGSGAWGLLLRRVGDDVLVHLLARCALFVLVAPSCAYQVCGPPLYQLGA
                                                                                                                                                                                                                                                                                                                                                                      ATQARPPHASGPRRIGCERAWNHSVREAGVPLGLPAPGARRRGGSASRSLPLPKRPRR
                                                                                                                                                                                                                                                                                                                                                                                   GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ROHHAGPPSTSRPPRPWDTPCPPVYAETKHFLYSSGDKEQLRPSFLLSSLRPSLTGARRL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PAAGVCAREKPQGSVAAPEEEDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           MPRAPRCRAVRSILRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              VET1FLGSRPWMPGTPRRLPRLPQRYWQMRPLFLELLGNHAQCPYGVLLKTHCPLRAAVT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        LAKFLHWLMSVYVVELLRSFFYVTETTFQKNRLFFYRKSVWSKLQSIGIRQHLKRVQLRE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      LSEAEVRQHREARPALLTSRLRFIPKPOGLRPIVNMDYVVGARTFRREKRAERLTSRVKA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RHNERR FLRNTKKFI SLGKHAKLSLQELTWKMSVRDCAWLRRSPGVGCVPAAEHRLREEI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        LSEAEVROHREARPALLTSRLRFIPKPDGLRPIVNMDYVVGARTFRREKRAERLTSRVKA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gape
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  LFSVLNYERARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDPPPELYFVKVDVTGAYDTI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PQDRLTEVIASIIKPQNTYCVRRYAVVQKAAHGHVRKAFKSHVSTLTDLQPYMRQFVAHL
                                                                                                                                                                                                        ô
                                                                                                                                                                                   Length 1132
                                                                                                                                                                                                        Indele
                                                                                                                                                                                  .
9
                                                                                                                                                                                                       ;
0
                                                                                                                                                                                  B
                                                                                                                                                                               Score 5961; I
Pred. No. 0;
; Mismatches
                                                                                                                                                                               100.0%; Sc
100.0%; Pr
tive 0;
                                                                                                                                                                                           Best Local Similarity 100.
Matches 1132; Conservative
                                                                                                                                                         Sequence 1132 AA;
                                                                                                                                                                                                                                                                         61
                                                                                                                                                                                                                                                                                                                                              121
                                                                                                                                                                                                                                                                                                                                                                                                                                         241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             541
                                                                                                                                                                                                                                                                                                 61
                                                                                                                                                                                                                                                                                                                        121
                                                                                                                                                                                                                                                                                                                                                                      181
                                                                                                                                                                                                                                                                                                                                                                                            181
                                                                                                                                                                               Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        301
                                                                                                                                                                                                                                                                                                                                                                                                                   241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               721
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       721
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             781
                                                                                                                                  insulin
   8$6666666666888
                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                           ద
                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                           ద
                                                                                                                                                                                                                                                                                                                 à
                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                               Š
                                                                                                                                                                                                                                                                                                                                                                                      요
                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                   쉽
                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                  1020
                                                                                                                                                                                                                                                                        1020
                                                                                                                                                                                                                                                                                                 1080
                                                                                                                                                                                                                                                                                                                       1080
                                   720
                                                           780
                                                                                  780
                                                                                                         840
                                                                                                                               840
                                                                                                                                                       900
                                                                                                                                                                            900
                                                                                                                                                                                                      960
                                                                                                                                                                                                                           960
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               New primary preadipocyte strain expressing telomerase reverse transcriptase, useful in research applications, screening assays, clinical applications, and in the administration of therapeutic agents, particularly for obesity.
                                                       PQDRLTEVIASIIKPQNTYCVRRYAVVQKAAHGHVRKAFKSHVSTLTDLQPYMRQFVAHL
                                                                    QETSPLRDAVVIEQSSSLNEASSGLFDVFLRFMCHHAVRIRGKSYVQCQGIPQGSILSTL
                                                                                                                                                               NRGFKAGRNMRRKLFGVLRLKCHSLFLDLQVNSLQTVCTNIYKILLLQAYRFHACVLQLP
                                                                                                                                                                                                                                                             FHQQVWKNPTFFLRVISDTASLCYSILKAKNAGMSLGAKGAAGPLPSEAVQWLCHQAFLL
           LFSVLNYERARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDPPPELYFVKVDVTGAYDTI
                       LCSLCYGDMENKLFAGIRRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPBYGCVVNL
                                                                                                                                                                                               RKTVVNFPVEDBALGGTAFVQMPAHGLFPWCGLLLDTRTLEVQSDYSSYARTSIRASLTF
                                                                                                                                                                                                                                                                                                           Enzyme; human; telomerase reverse transcriptase; adipogenic cape
primary preadipocyte cell; adipogenesis; obesity; adipocytokine;
anorectic; adiponectin; insulin.
                                                                                                                                                                                                                                                                                                                                        Human telomerase reverse transcriptase.
                                                                                                                                                                                                                                                                                                                                                                                                                            Ź
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Disclosure; Page 13; 53pp; English
                                                                                                                                                                                                                                                                                                                                                                                                                            protein; 1132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CORP.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            06-OCT-2001; 2001US-0327650P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    07-OCT-2002; 2002WO-US031635
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (BOST-) BOSTON MEDICAL CENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Tchkonia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2003-421278/39.
                                                                                                                                                                                                                                                                                                                                                                                                                         standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         N-PSDB; ACC44482.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        WO2003031640-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       29-AUG-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Kirkland J,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 17-APR-2003
                               661
                                                                             721
                                                                                                                                                   841
                                                                                                                                                                                                 901
                                                                                                                                                                                                                                              196
                                                                                                                                                                                                                                                                    196
                                                                                                                                                                                                                                                                                            1021
                                                                                                                                                                                                                                                                                                                  1021
                                                                                                                                                                                                                                                                                                                                                               1081
           661
                                                      721
                                                                                                    781
                                                                                                                             781
                                                                                                                                                                                                                       901
                                                                                                                                                                                                                                                                                                                                         1081
                                                                                                                                                                                                                                                                                                                                                                                                                                               ABR58045;
                                                                                                                                                                                                                                                                                                                                                                                                                         ABR58045
                                                                        g
                             g
                                                                                                                                                                      a
                                                      à
                                                                                                   ò
                                                                                                                       g
                                                                                                                                              ठ
                                                                                                                                                                                              ò
                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                           ò
```

셤 ò 8 8 용 ö

Gaps

ö

Length 1132; Indels

7; ö 80

120

9

180

300

360

420 420 480 480 540

Thu

```
QETSPLRDAVVIEQSSSLNEASSGLFDVFLRFMCHHAVRIRGKSYVQCQGIPQGSILSTL 840
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        RKTVVNFPVEDEALGGTAFVQMPAHGLFPWCGLLLDTRTLEVQSDYSSYARTSIRASLTF 960
an error in the specification or sequence listing, the Seq ID numbers given in the disclosure do not correspond to those given in the sequence listing. It is therefore unclear which Seq ID number corresponds to which sequence and exactly which sequence is being claimed.
                                                                                                                                                                                                                                                                                                                  SYLPNTVTDALRGSGAWGLLLRRVGDDVLVHLLARCALFVLVAPSCAYQVCGPPLYQLGA 180
                                                                                                                                                                               DARPPPAAPSFROVSCLKELVARVLORLCERGAKNVLAFGFALLDGARGGPPEAFTTSVR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   VETIFLGSRPWMPGTPRRLPRLPQRYWQMRPLFLELLGNHAQCPYGVLLKTHCPLRAAVT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  LAKFLHWLMSVYVVELLRSFFYVTETTFOKNRLFFYRKSVWSKLOSIGIRQHLKRVQLRE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LAKFLHWLMSVYVVELLRSFFYVTETTFQKNRLFFYRKSVWSKLQSIGIRQHLKRVQLRE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              LSEAEVROHREARPALLTSRLRFIPKPDGLRPIVNMDYVVGARTFRREKRAERLTSRVKA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PODELTEVIASIIKPONTYCVRRYAVVOKAAHGHVRKAFKSHVSTLTDLOPYMRQFVAHL
                                                                                                                                                                                                                           DARPPPAAPSFROVSCLKELVARVLORLCERGAKNVLAFGFALLDGARGGPPEAFTTSVR
                                                                                                                                                                                                                                                                                    SYLPNTVTDALRGSGAMGLLIRRVGDDVLVHLLARCALFVLVAPSCAYQVCGPPLYQLGA
                                                                                                                                                                                                                                                                                                                                                                   GAAPEPERTPVGOGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PAAGVCAREKPQGSVAAPEEEDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PAAGVCAREKPOGSVAAPEEEDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        RHNERRFLRNTKKFISLGKHAKLSLQELTWKMSVRDCAWLRRSPGVGCVPAAEHRLREEI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          LCSLCYGDMENKLFAGIRRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGCVVNL
                                                                                                                                                              MPRAPRCRAVRSLLRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW
                                                                                                                                                                                                                                                                                                                                                ATOARPPHASGPRRRIGCERAWNHSVREAGVPLGLPAPGARRRGGSASRSLPLPKRPRR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ROHHAGPPSTSRPPR PWDTPCPPVYAETKHFLYSSGDKEQLRPSFLLSSLRPSLTGARRL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       RHNERRFLRNTKKFISLGKHAKLSLQELTWKMSVRDCAWLRRSPGVGCVPAAEHRLREEI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          LFSVLNYERARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDPPPELYFVKVDVTGAYDTI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             QETSPLRDAVVIEQSSSLNEASSGLFDVFLRFMCHHAVRIRGKSYVQCQGIPQGSILSTL
                                                                                                    100.0%; Score 5961;
100.0%; Pred. No. 0;
cive 0; Mismatches
                                                                                                                                  Conservative
                                                                                                                    Similarity
                                                                         Š
                                                                         Sequence 1132
                                                                                                    Query Match
Best Local Simil
Matches 1132; C
                                                                                                                                                                                                                           61
                                                                                                                                                                                                                                                         61
                                                                                                                                                                                                                                                                                                                   121
                                                                                                                                                                                                                                                                                                                                                                               181
                                                                                                                                                                                                                                                                                                                                                                                                                                           241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      661
                                                                                                                                                                                                                                                                                       121
                                                                                                                                                                                                                                                                                                                                                   181
                                                                                                                                                                                                                                                                                                                                                                                                               241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    721
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  721
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                781
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           781
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            841
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        841
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      901
888888
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                          d
                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                       ઠે
                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                 ઠે
                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                1020
                                                                                                                                                                                                            1080
                                                                                                                                                                                                                                          1080
                                                                                                                                                                              1020
                                                                                       960
                                                                                                                  960
                                                          900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            This invention relates to a novel composition for inducing a reversible state of a continual growth in cultured cells and comprises at least one dompound comprising a cyclin dependent kinase (cdk)4, cdk2 or cdk6 protein having an activating mutation. Growth and division of living cells involve a regular series of events and processes that comprise the cell cycle. Cyclin dependent kinases cdk2, cdk4 and cdk6 are involved in the control of G1, the point at which cells irrevocably commit to DNA synthesis and thus enter the cell cycle. The invention is useful in reversibly inducing continual growth in normal cells and may allow the screening of cancer-causing agents with the continual growth-induced cells. The present sequence is that of the human TERT protein, the catalytic subunit of telomerase, related to the invention. Note: Due to
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A composition for reversibly inducing continual growth in normal cells comprises a cyclin dependent kinase protein (e.g. cdk4, cdk2 or cdk6) or its active fragment, derivative, homolog or analog, having an activating mutation.
QETSPLRDAVVI EQSSSLNEASSGLFDVFLRFMCHHAVRIRGKSYVQCQGIPQGSILSTL
                                             NRGFKAGRNMRRKLFGVLRLKCHSLFLDLQVNSLQTVCTNIYKILLLQAYRFHACVLQLP
                                                                                                                                                                    NRGFKAGRNWRRKLFGVLRLKCHSLFLDLQVNSLQTVCTNIYXILLLLQAYRFHACVLQLP
                                                                                                                                                                                                          FHOOVWKNPTFFLRVISDTASLCYSILKAKNAGMSLGAKGAAGPLPSEAVQWLCHQAFLL
                                                                                                                                                                                                                               FHQQVWRNPTFFLRVISDTASLCYSILKARNAGMSLGAKGAAGPLPSEAVQWLCHQAFLL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  continual growth, cultured cell, cyclin dependent kinase; cdk4; cdk2; cdk6; activating mutation; cell growth; cell division; cell cycle; cancer-causing agent; continual growth-induced cell; enzyme; TERT;
                                                                                       RKTVVNFPVEDEALGGTAFVQMPAHGLFPWCGLLLDTRTLEVQSDYSSYARTS1RASLTF
                            LCSLCYGDMENKLFAGIRRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGCVVNL
                                                                                                                                                                                                                                                                                      KLTRHRVTYVPLIGSLRTAQTQLSRKLPGTTLTALEAAANPALPSDFKTILD 1132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       cell
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       continual
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Claim 16; Page 135-138; 77pp; English
                                                                                                                                                                                                                                                                                                                                                                                 Š
                                                                                                                                                                                                                                                                                                                                                                               ADD21420 standard; protein; 1132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          t
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       15-NOV-2002; 2002WO-US036729
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     15-NOV-2001; 2001US-0334760P
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Mettus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Human TERT protein related
                                                                                                                                                                                                                                                                                                                                                                                                                                           (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             WPI; 2003-449813/42.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (UTEM ) UNIV TEMPLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Reddy PE, Rane SG,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  telomerase; human
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           WO2003044169-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                           15-JAN-2004
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         30-MAY-2003
                                                                                                                                                                                                            1021
                                                                                                                                                                                                                                          1021
                                                                                                                                                                                                                                                                       1081
                                                                                                                                                                                                                                                                                                     1081
                            841
                                                          841
                                                                                      901
                                                                                                                  901
                                                                                                                                                961
                                                                                                                                                                              961
                                                                                                                                                                                                                                                                                                                                                                                                             ADD21420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Ношо
                                                                                                                                                                                                                                                                                                                                                                 ADD21420
                                                        셤
                                                                                    ò
                                                                                                            ద
                                                                                                                                              ઠે
                                                                                                                                                                        셤
                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                       ઠે
                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                 ò
```

720

780

840

900

180 180 240 240 300 300

120

9

360

420 420 480 480 540 540 900 9 99 99 720 720 780

1021 961

961

ሯ 유 ò 윱 ઠે a

1021

1081 1081

```
MPRAPRCRAVRSLLRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW
                                           DARPPPAAPSFRQVSCLKELVARVLQRLCERGAKAVLAFGFALLDGARGGPPBAFTTSVR
                                                                                                 SYLPNTVTDALRGSGAWGLLLRRVGDDVLVHLLARCALFVLVAPSCAYQVCGPPLYQLGA
                                                                                                                                                     ATQARPPPHASGPRRRLGCERAWNHSVREAGVPLGLPAPGARRRGGSASRSLPLPKRPRR
                                                                                                                                                                                                            GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG
                                                                                                                                                                                                                                                               RQHHAGPPSTSRPPRPWDTPCPPVYAETKHFLYSSGDKEQLRPSFLLSSLRPSLTGARRL
                                                                                                                                                                                                                                                                                                                                                          VETIFLGSRPWMPGTPRRLPRLPQRYWQMRPLFLELLGNHAQCPYGYLLKTHCPLRAAVT
                                                                                                                                                                                                                                                                                                                                                                                                                PAAGVCAREKPQGSVAAPEEEDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS
                                                                                                                                                                                                                                                                                                                                                                                                                                 RHNERRFLRNTKKFISLGKHAKLSLQELTWKMSVRDCAWLRRSPGVGCVPAAEHRLREEI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        LAKFLHWLMSVYVVELLRSFFYVTETTFQKNRLFFYRKSVWSKLQSIGIRQHLKRVQLRE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LSEAEVROHREARPALLTSRIRFIPKPDGLRPIVNMDYVVGARTFRREKRAERLTSRVKA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PODRLTEVIASIIKPONTYCVRRYAVVOKAAHGHVRKAFKSHVSTLTDLOPYMRQFVAHL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                QETSPLRDAVVIEQSSLNEASSGLFDVFLRFMCHHAVRIRGKSYVQCQIPQGSILSTL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       LFSVLNYERARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDPPPELYFVKVDVTGAYDTI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              LCSLCYGDMENKLFAGIRRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGCVVNL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         LCSLCYGDMENKLFAGIRRDGLLTRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGCVVNL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NRGFKAGRNMRRKLFGVLRLKCHSLFLDLQVNSLQTVCTNIYKILLLGAYRFHACVLQLP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RKTVVNFPVEDEALGGTAFVQMPAHGLFPWCGLLLDTRTLEVQSDYSSYARTSIRASLTF
                                                                                                           61
                                                                                 61
                                                                                                                                      121
                                                                                                                                                                                           181
                                                                                                                                                                                                                     181
                                                                                                                                                                                                                                               241
                                                                                                                                                                                                                                                                            241
                                                                                                                                                                                                                                                                                                                               301
                                                                                                                                                                                                                                                                                                                                                            361
                                                                                                                                                                                                                                                                                                     301
                                                                                                                                                                                                                                                                                                                                                                                      361
                                                                                                                                                                                                                                                                                                                                                                                                                                           421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 481
                                                                                                                                                                                                                                                                                                                                                                                                                 421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               199
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           721
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      721
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  781
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  841
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            781
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        841
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             901
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    961
                                           셤
                                                                       ò
                                                                                                    셤
                                                                                                                                                        셤
                                                                                                                           ઠ
                                                                                                                                                                                         ò
                                                                                                                                                                                                               a
                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                            Š
                                                                                                                                                                                                                                                                                                     à
                                                                                                                                                                                                                                                                                                                         a
                                                                                                                                                                                                                                                                                                                                                      ⋩
                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         The invention relates to novel pluripotent stem cells originating from a skeletal muscle interstitial tissue. A cell of the invention has cardiant, hepatoriopic, nephrotropic, cytostatic, nootropic, neuroprotective, antiarthritic, antidiabetic, and antiarteriosclerotic activity. The cells are useful in drugs for regenerating tissues and diseases, diabetes and arteriosclerosis. The pluripotent stem cells were isolated from rat skeletal muscles after analysis of the various components by culturing and staining, as well as by other biochemical analysis. The present sequence is used in the exemplification of the
                                                                                                                                                                                                                                                                                                                                               stem cell; cardiant; hepatotropic; nephrotropic; cytostatic; nootropic;
neuroprotective; antiarthritic; antidiabetic; antiarteriosclerotic;
heart failure; leukaemia; neurodegenerative disease; diabetes;
arteriosclerosis; skeletal muscle; human.
RKTVVNFPVEDEALGGTAFVQMPAHGLFPWCGLLLDTRTLEVQSDYSSYARTSIRASLTF
                           FHOOVWKNPTFFLRVISDTASLCYSILKAKNAGMSLGAKGAAGPLPSEAVQWLCHQAFLL
                                                                                                  콗
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Pluripotent stem cells originating in skeletal muscle interstitial tissue, useful in drugs for regenerating tissues and cells e.g. in treating heart failure, leukemia, neurodegenerative diseases, and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sakurada
                                                                                                                                      KLTRHRVTYVPLLGSLRTAQTQLSRKLPGTTLTALEAAANPALPSDFKTILD
                                                                                                                                                      Ė
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Hotta
                                                                                                                                                                                                                                                                                                                   Human protein of the invention SEQ ID NO:19,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Nakamura Y,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Disclosure; SEQ ID NO 19; 29pp; Japanese.
                                                                                                                                                                                                                                          $
                                                                                                                                                                                                                                        protein; 1132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Akatsuka A,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           20-SEP-2001; 2001JP-00286332. 09-MAY-2002; 2002JP-00133575.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 20-SEP-2002; 2002WO-JP009702
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (KYOW ) KYOWA HAKKO KOGYO KK.
(TAMA/) TAMAKI T.
(ANDO/) ANDO K.
                                                                                                                                                                                                                                                                                          (first entry)
                                                                                                                                                                                                                                   ADH72743 standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    WPI; 2003-371925/35
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ando K,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Sequence 1132 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                             WO2003027281-A2
```

Homo sapiens,

Ļ

Tamaki

diabetes

25-MAR-2004

ADH72743;

ADH72743

1020

840

900 900 960

840 780

1020

1080

g 8

ö

Gарв

ö

Length 1132; Indels

OB

Score 5961; Pred. No. 0; Mismatches

100.0%; Sc 100.0%; Pr tive 0;

Query Match 100.
Best Local Similarity 100.
Matches 1132; Conservative

invention

Thu

ò g

us-10-053-758-225.rag

```
NRGFKAGRNMRRKLFGVLRLKCHSLFLDLQVNSLQTVCTNIYKILLLQAYRFHACVLQLP 1020
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     FHOOVWKNPTFFLRVISDTASLCYSILKAKNAGMSLGAKGAAGPLPSEAVOWLCHQAFLL 1080
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                780
                                                                                                                         360
                                                                                                                                                     360
                                                                                                                                                                                 420
                                                                                                                                                                                                                                                                                                                                                                                              900
                                                                                                                                                                                                                                                                                                                                                                                                                             999
                                                                                                                                                                                                                                                                                                                                                                                                                                                       9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        720
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   720
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              780
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           840
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        840
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                960
                                                                                                                                                                                                               420
                                                                                                                                                                                                                                             480
                                                                                                                                                                                                                                                                         480
                                                                                                                                                                                                                                                                                                        540
                                                                                                                                                                                                                                                                                                                                                                  9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     900
                                                                             GAAPEPERTPVGQCSWAHPGRTRGPSDRGFCVVSPARPABEBATSLEGALSGTRHSHPSVG
                    GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG
                                                                                                                        ROHHAGPPSTSRPPRPWDTPCPPVYAETKHFLYSSGDKEQLRPSFLLSSLRPSLTGARRL
                                                                                                                                       LAKFLHWLMSVYVVELLRSFFYVTETTFQKNRLFFYRKSVWSKLQSIGIRQHLKRVQLRE
                                                                                                                                                                                                                                                                                                                                                                                LSEAEVROHREARPALLISRLRFIPKPDGLRPIVNMDYVVGARTFRREKRAERLISRVKA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PQDRLTEVIASIIKPQNTYCVRRYAVVQKAAHGHVRKAFKSHVSTLTDLQPYMRQFVAHL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PODRLTEVIASIIKPQNTYCVRRYAVVOKAAHGHVRKAFKSHVSTLTDLQPYMRQFVAHL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             LCSLCYGDMENKLFAGIRRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGCVVNL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RKTVVNFPVEDEALGGTAFVQMPAHGLFPWCGLLLDTRTLEVQSDYSSYARTSIRASLTF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           FHOOVWKNPTFFLRVISDTASLCYSILKAKNAGMSLGAKGAAGPLPSEAVQWLCHQAFLL
                                                                                                                                                                                 VETIFLGSRPWMPGTPRRLPRLPQRYWQMRPLFLELLGNHAQCPYGVLLKTHCPLRAAVT
                                                                                                                                                                                                       VETIFICSRPWMPGTPRRLPRLPQRYWQMRPLFLELLGNHAQCPYGVLLKTHCPLRAAVT
                                                                                                                                                                                                                                                                                                                      LSEAEVRQHREARPALLTSRLRFIPKPDGLRPIVNMDYVVGARTFRREKRAERLTSRVKA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       LFSVLNYERARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDPPPELYFVKVDVTGAYDTI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      LCSLCYGDMENKLFAGIRRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGCVVNL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                RKTVVNFPVEDEALGGTAFVQMPAHGLFPWCGLLLDTRTLEVQSDYSSYARTSIRASLTF
   ATQARPPHASGPRRRLGCERAWNHSVREAGVPLGLPAPGARRRGGSASRSLPLPKRPRR
                                                                                                                                                                                                                                                                                                     RHNERRFLRNTKKFISLGKHAKLSLQELTWKMSVRDCAMLRRSPGVGCVPAAEHRLREEI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           QETSPLRDAVVIEQSSSLNEASSGLFDVFLRFMCHHAVRIRGKSYVQCQGIPQGSILSTL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               KLTRHRVTYVPLLGSLRTAQTQLSRKLPGTTLTALEAAANPALPSDFKTILD 1132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 25-MAR-2004
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        961
                                                                                                                                                                                                             361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1021
   181
                                181
                                                              241
                                                                                          241
                                                                                                                      301
                                                                                                                                                    301
                                                                                                                                                                                 361
                                                                                                                                                                                                                                                                       421
                                                                                                                                                                                                                                                                                                                                  481
                                                                                                                                                                                                                                                                                                                                                                                               541
                                                                                                                                                                                                                                                                                                                                                                                                                                                       601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        781
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     841
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   841
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             901
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1021
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1081
                                                                                                                                                                                                                                             421
                                                                                                                                                                                                                                                                                                      481
                                                                                                                                                                                                                                                                                                                                                                  541
                                                                                                                                                                                                                                                                                                                                                                                                                             601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                721
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              721
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           781
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                901
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          961
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1081
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ADG90599
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ADG90599,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ADG90599
ID ADG9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        RESULT
                       유
                                                              ò
                                                                                 셤
                                                                                                              જે
                                                                                                                                               원
                                                                                                                                                                                 ò
                                                                                                                                                                                                       음
                                                                                                                                                                                                                                      8
                                                                                                                                                                                                                                                                    유
                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ď
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    XXXXXX
                                                                                                                                                                                                                                                                                           જે
                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              음
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               The invention relates to the isolation of compounds that bind and inhibit the activity of HIV-1 reverse transcriptase (RT) or human telomerase ceverse transcriptase (HTRRT). The method involves determining these compounds using a HIV-1 RT/HTERT chimeric construct containing these catalytic sites of each enzyme. The nucleic acid is useful for treating or preventing unregulated cellular growth, including cancer cell and tumor growth. It is also useful in gene therapy. Compounds that inhibit telomerase activity can be used to traat cancer. The vectors of the invention can be used to amplify DNA or RNA encoding HIV-RT/HTERT and/or express DNA which encodes HIV-RT/HTERT. This sequence corresponds to the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SYLPNTVTDALRGSGAWGLLLRRVGDDVLVHLLARCALFVLVAPSCAYQVCGPPLYQLGA 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DARPPPAAPSFROVSCLKELVARVLORLCERGAKNVLAFGFALLDGARGGPPEAFTTSVR 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  9
                                                                                                                                                                                                                          cytostatic, gene therapy, reverse transcriptase-Inhibitor, HIV-1, human telomerase reverse transcriptase, hTERT; chimeric, catalytic site, unregulated cellular growth, cancer, tumor.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              MPRAPRCRAVRSLLRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            New HIV-1 Reverse Transcriptase and human Telomerase Reverse
Transcriptase proteins and nucleic acids, useful in gene therapy or f
treating or preventing unregulated cellular growth, e.g. cancer cell
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gaps
KLTRHRVTYVPLIGSLRTAQTQLSRKLPGTTLTALEAAANPALPSDFKTILD 1132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ;
0
                 DB 8; Length 1132;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ;
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  100.0%; Score 5961; 100.0%; Pred. No. 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Example 1; SEQ ID NO 4; 141pp; English.
                                                                                                        Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ä
                                                                                                     ADG70114 standard; protein; 1132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Stouten
                                                                                                                                                                                                                                                                                                                                                                            14-APR-2003; 2003WO-EP003874
                                                                                                                                                                                                                                                                                                                                                                                                          08-MAY-2002; 2002US-0378820P
                                                                                                                                                                   entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                        (PHAA ) PHARMACIA ITAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Schnuchel A,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2004-012095/01.
                                                                                                                                                                  (first
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       express DNA which exturns thuman TERT protein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Best Local Similarity
Matches 1132; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 WPI; 2004-012095/
N-PSDB; ADG70113.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sequence 1132 AA;
                                                                                                                                                                                                                                                                                                                   WO2003095605-A2
                                                                                                                                                                                            hTERT protein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            tumor growth.
                                                                                                                                                                                                                                                                                     sapiens
                                                                                                                                                                11-MAR-2004
                                                                                                                                                                                                                                                                                                                                                20-NOV-2003
                                                                                                                                   ADG70114;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             _
1081
                             1081
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Moll J,
                                                                                                                                                                                                                                                                                       Homo
                                                                         RESULT 19
                                                                                        ADG70114
```

ઠે g ઠે g ઠે

Jan

```
1020
                                 480
                                                                                                                      900
                                                                                                                                                                              9
                                                                                                                                                 900
                                                                                                                                                                                                           9
                                                                                                                                                                                                                                       720
                                                                                                                                                                                                                                                                 720
                                                                                                                                                                                                                                                                                                780
                                                                                                                                                                                                                                                                                                                          780
                                                                                                                                                                                                                                                                                                                                                      840
                                                                                                                                                                                                                                                                                                                                                                                 840
                                                                                                                                                                                                                                                                                                                                                                                                             900
                                                                                                                                                                                                                                                                                                                                                                                                                                        900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      960
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 960
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Human; embryonic stem cell; pluripotent stem cell; abnormal cell growth; malignancy; differentiation.
                      LAKFLHWLMSVYVVELLRSFFYVTETTFQKNRLFFYRKSVWSKLQSIGIRQHLKRVQLRE
                                                                                                                                                                                             PAAGVCAREKPQGSVAAPEEEDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS
                                                             RHNERRFLRNTKKFISLGKHAKLSLQELTWKMSVRDCAWLRRSPGVGCVPAAEHRLREEI
                                                                                                                                                                           LSEAEVRQHREARPALLTSRLRFI PKPDGLRPIVNMDYVVGARTFRREKRAERLTSRVKA
                                                                                                                                                                                                                                                      LFSVLNYERARRPGLIGASVLGLDDIHRAWRTFVLRVRRAQDPPPELYFVKVDVTGAYDTI
                                                                                                                                                                                                                                                                                                               PQDRLTEVIASIIKPQNTYCVRRYAVVQKAAHGHVRKAFKSHVSTLTDLQPYMRQFVAHL
                                                                                                                                                                                                                                                                                                                                                                       QETSPLRDAVVIEQSSSLNEASSGLFDVFLRFMCHHAVRIRGKSYVQCQGIPQGSILSTL
                                                                                                                                                                                                                                                                                                                                                                                                           LCSLCYGDMENKLFAGIRRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGCVVNL
                                                                                                                                                                                                                                                                                                                                                                                                                                LCSLCYGDMENKLFAGIRRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVFEYGCVVNL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RHNERRFLRNTKKFISLGKHAKLSLQELTWKMSVRDCAWLRRSPGVGCVPAAEHRLREEI
                                                                                                                                                                                                                                    LFSVLNYERARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDPPPELYFVKVDVTGAYDTI
                                                                                                                                                                                                                                                                                             PQDRLTEVIASIIKPQNTYCVRRYAVVQKAAHGHVRKAFKSHVSTLTDLQPYMRQFVAHL
                                                                                                                                                                                                                                                                                                                                                     QETSPLRDAVVIEQSSSLNEASSGLFDVFLRFMCHHAVRIRGKSYVQCQGIPQGSILSTL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    RKTVVNFPVEDEALGGTAFVQMPAHGLFPWCGLLLDTRTLEVQSDYSSYARTSIRASLTF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NRGFKAGRNMRRKLFGVLRLKCHSLFLDLQVNSLQTVCTNIYKILLLQAYRFHACVLQLP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     FHQQVWKNPTFFLRVISDTASLCYSILKAKNAGMSLGAKGAAGPLPSEAVQWLCHQAFLL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            KLTRHRVTYVPLLGSLRTAQTQLSRKLPGTTLTALEAAANPALPSDFKTILD 1132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Human telomerase reverse transcriptase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Ā
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ADI82172 standard; protein; 1132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            13-MAR-2003; 2003US-00388578
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       13-MAR-2003; 2003US-00388578.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (STAN/) STANTON L W.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   US2003224411-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Homo sapiens.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      22-APR-2004
                                                                                                                                                541
                              421
                                                            481
                                                                                       481
                                                                                                                                                                                                                                                                 661
                                                                                                                                                                                                                                                                                                                                                                                                                                      841
                                                                                                                     541
                                                                                                                                                                                                        601
                                                                                                                                                                                                                                                                                             721
                                                                                                                                                                                                                                                                                                                        721
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               106
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1021
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1081
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1081
                                                                                                                                                                           601
                                                                                                                                                                                                                                    661
                                                                                                                                                                                                                                                                                                                                                   781
                                                                                                                                                                                                                                                                                                                                                                              781
                                                                                                                                                                                                                                                                                                                                                                                                             841
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    901
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            961
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       961
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1021
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                    셤
                                                                                                                                          엄
                                                                                                                                                                                                   유
                                                                                                                                                                                                                                                         셤
                                                                                                                   ò
                                                                                                                                                                           ઠે
                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                            ઠે
                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                          ð
                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                 The invention relates to a novel method for eliciting an immune response in a mammalian subject that is specific for its own telomerase reverse transcriptase (TERT), comprising administering an immunogenic composition containing a protein with a least 20 consecutive amino acids of TERT of another mammalian species, or a nucleic acid encoding the protein. A activity. The protein has cytostatic, and immunostimulant activity. The protein a medicament for the treatment of cancer in a useful in the manufacture of a medicament for the treatment of cancer in a human or for eliciting a cytotoxic T cell response in a human.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    9
                                                                                                                                                                                                                                                                                                                        telomerase
                                                                                                                                                                                                                                                                                                                 Eliciting an immune response in a mammal specific for its own telomerase reverse transcriptase (TERT), useful for treating or preventing cancer, comprises administering a composition containing TERT of another mammalian species.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      VETIFLGSRPWMPGTPRRLPRLPQRYWQMRPLFLELLGNHAQCPYGVLLKTHCPLRAAVT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MPRAPRCRAVRSLLRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DARPPPAAPSFROVSCLKELVARVLORLCERGAKNVLAFGFALLDGARGGPPEAFTTSVR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GAAPEPERTPVGGGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SYLPNIVIDALRGSGAWGLLLRRVGDDVLVHLLARCALFVLVAPSCAYQVCGPPLYQLGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ATQARPPHASGPRRLGCERAWNHSVREAGVPLGLPAPGARRRGGSASRSLPLPKRPRR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ROHHAGPPSTSRPPRPWDTPCPPVYAETKHFLYSSGDKEQLRPSFLLSSLRPSLTGARRL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gaps
                           human; immune response; telomerase reverse transcriptase; TERT; cytostatic; immunostimulant; cancer; cytotoxic T cell response.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ;
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length 1132;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ..
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           í,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DB
                                                                                                                                                                                                                                                2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            i; Score 5961; D
i; Pred. No. 0;
0; Mismatches
                                                                                                                                                                                                                                                Wang
                                                                                                                                                                                                                                                                                                                                                                                      Claim 66; SEQ ID NO 2; 44pp; English.
                                                                                                                                                                                                                                                Σ
                                                                                                                                                                                                                                                Frolkis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              100.0%;
                                                                                                                                                                                     27-JUN-2002; 2002US-0393295P
                                                                                                                                                         24-JUN-2003; 2003WO-US019844
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Best Local Similarity 100
Matches 1132; Conservative
                                                                                                                                                                                                                                                IA,
TERT SEQ ID NO: 2
                                                                                                                                                                                                                                             Ferber
                                                                                                                                                                                                                                                                          2004-071946/07
                                                                                                                                                                                                               (GERO-) GERON CORP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sequence 1132 AA;
                                                                                                                                                                                                                                                                                       N-PSDB; ADG90598
                                                                                                WO2004002408-A2
                                                                     Homo sapiens
                                                                                                                                                                                                                                             Majumdar A,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        19
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     361
```

셤

à

90 00

ò

셤

8 6

\$ a

ò

ò

cells by

Mandalam R;

```
Assessing culture of undifferentiated primate pluripotent stem cells b detecting expression of markers e.g., Zic family member 3, other than human telomerase reverse transcriptase/octamer binding transcription
                                 Gold JD, Irving JM,
                                                                                        Claim 1; SEQ ID NO 2; 106pp; English.
                                  Brandenberger R,
ď
                                                                                                                                                                                                                                                                                                                           pluripotent stem cells
BRANDENBERGER
    GOLD J D.
IRVING J M.
MANDALAM R.
                                                WPI; 2004-119701/12.
                   MOK M.
SHELTON D.
                                    Shelton D;
                                                     N-PSDB; ADI82171.
                                  Ľ,
                                  Stanton
              (MAND/)
                        (SHEL/)
    (GOLD/)
                                       Mok M,
```

The invention relates to assessing a culture of undifferentiated primate pluripotent stem cells (pps, e.g. embryonic stem cells), involving detecting expression of markers (RR1) e.g. Zic family member 3 (ZIC3), as detecting expression of markers (RR1) e.g. Zic family member 3 (ZIC3), as detecting expression of markers (RR1) e.g. Zic family member 3 (ZIC3), as a prevent a proper pluripotent by the protein and hrExr and/or Oct3/4 or second marker chosen from (RR2). Also included are maintaning (RI2) or second marker chosen from (RR2). Also included are maintaning (RI2) pps cells in a pluripoten state (involves causing them to express one of the following markers (RR3) and the RRA can of finger protein SZP1-10 x zinc finger protein (JR2), hypothetical protein finger protein SZP1-10 x zinc finger protein (JR4).

CC KRAB-zinc finger protein SZP1-10 x zinc finger protein Jade-1 (Jade-1), rectipal-like zinc finger protein (ZR3), por high protein (ZR4).

CC KRAB-zinc finger protein SZP1-10 x zinc finger protein of cereballum (ZR2), or any other marker (RR4) chosen from HDD protein Jade-1 (JAM2)), core promoter element binding protein (COPEB), etc., as given in the specification), maintaning pps cells in a pluripotent state (involves culturing pps cells or their progeny in the presence of a normally core promoter element binding protein (COPEB), etc., as given in the preciped protein that is encoded by a gene that down-regulated upon differentiation of human embryonic stem (RB3) cells, chosen from the specification), causing pps cells to differentiate (involves culturing pps cells or their progeny in the presence of a normally secreted protein that is encoded by a gene that up regulated time of the specification), causing pps cells to differentiate on protein protein or their progeny in the presence of a normally centered protein protein or their progeny in the presence of a normally center core of the specification), causing pps cells or their progeny in the presence of a normally center without differentiation or dese

ö Length 1132; Indels 8 . B 0; Mismatches Score 5961; Pred. No. 0; 100.0%; Conservative Local Similarity Sequence 1132 AA; Matches 1132; Query Match

NRGFKAGRNWRRKLFGVLRLKCHSLFLDLQVNSLQTVCTNIYKILLLQAYRFHACVLQLP 1020 480 480 9 600 99 999 720 720 840 960 180 360 420 780 780 840 900 900 SYLPNIVIDALRGSGAWGLILRRVGDDVLVHLLARCALFVLVAPSCAYQVCGPPLYQLGA 180 GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG 300 VETIFICSRPWMPGTPRRLPRLPQRYWQMRPLFLELLGNHAQCPYGVLLKTHCPLRAAVT 420 LAKFLHWIMSVYVVELLRSFFYVTETTFQKNRLFFYRKSVWSKLQSIGIRQHLKRVQLRE SYLPNIVIDALRGSGAWGLLLRRVGDDVLVHLLARCALFVLVAPSCAYQVCGPPLYQLGA RQHHAGPPSTSRPPRPWDTPCPPVYAETKHFLYSSGDKEQLRPSFLLSSLRPSLTGARL LSEAEVRQHREARPALLTSRLRFIPKPDGLRPIVNMDYVVGARTFRREKRAERLTSRVKA ATQARPPHASGPRRRLGCERAWNHSVREAGVPLGLPAPGARRRGGSASRSLPLPKRPRR ATQARPPPHASGPRRRIGCERAWNHSVREAGVPLGLPAPGARRRGGSASRSLPLPKRPRR GAAPEPERTPVGGGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG VETIFLGSRPWMPGTPRRLPRLPQRYWQMRPLFLELLGNHAQCPYGVLKTHCPLRAAVT 421 PAAGVCAREKPQGSVAAPEEEDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS LAKFLHWLMSVYVVELLRSFFYVTETTFOKNRLFFYRKSVWSKLOSIGIRQHLKRVQLRE LSEAEVRQHREARPALLTSRLRFI PKPDGLRPI VNMDYVVGARTFRREKRAERLTSRVKA LFSVLNYERARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDPPELYFVKVDVTGAYDTI PQDRLTEVIASIIKPQNTYCVRRYAVVQKAAHGHVRKAFKSHVSTLTDLQPYMRQFVAHL QETSPLRDAVVIEQSSSLNEASSGLFDVFLRFMCHHAVRIRGKSYVQCQGI PQGSILSTL QETSPLRDAVVIEQSSSLNEASSGLFDVFLRFWCHHAVRIRGKSYVQCQGIPQGSILSTL RKTVVNF PVEDEALGGTAFVQMPAHGLFPWCGLLLDTRTLEVQSDYSSYARTSIRASLTF DARPPPAAPSFRQVSCLKELVARVLQRLCERGAKNVLAFGFALLDGARGGPPEAFTTSVR ROHHAGPPSTSRPPRPWDTPCPPVYAETKHFLYSSGDKEQLRPSFLLSSLRPSLTGARRL PAAGVCAREKPQGSVAAPEEEDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS RHNERRFLRNTKKFISLGKHAKLSLQELTWKMSVRDCAWLRRSPGVGCVPAAEHRLREEI LFSVLNYERARRPGLLGASVLGLDD1HRAWRTFVLRVRAQDPPPELYFVKVDVTGAYDT1 PQDRLTEVIASIIKPQNTYCVRRYAVVQKAAHGHVRKAFKSHVSTLTDLQPYMRQFVAHL LCSLCYGDMENKLFAGIRRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGCVVNL RKTVVNFPVEDEALGGTAFVQMPAHGLFPWCGLLLDTRTLEVQSDYSSYARTSIRASLTF NRGFKAGRNMRRKL FGVLRLKCHSLFLDLQVNSLQTVCTNIYKILLLQAYRFHACVLQLP FHQQVWKNPTFFLRVISDTASLCYSILKAKNAGMSLGAKGAAGPLPSEAVQWLCHQAFLL RHNERRFLRNTKKFISLGKHAKLSLQELTWKMSVRDCAWLRRSPGVGCVPAAEHRLREEI KLTRHRVTYVPLLGSLRTAQTQLSRKLPGTTLTALEAAANPALPSDFKTILD 1132 241 301 541 106 961 121 1021 1081 61 61 121 181 181 241 301 361 361 421 481 481 541 601 601 199 661 721 721 781 781 841 841 901 961 ò a δ 셤 ò a ò 유 ò g ò 셤 g 셤 g ð 셤 ð g ò 요 셤 8 유 유 셤 ò ò 8 ઠે 셤 8 8 8

Page 22

240

300

360

420 442 480 502 540

562 900 9 682 720 742 780 802 840 862 900

202

```
LCSLCYGDMENKLFAGIRRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVFEYGCVVNL 922
                                     143 SYLPNTVIDALRGSGAWGILLRRVGDDVLVHLLARCALFVLVAPSCAYQVCGPPLYQLGA
                                                                                               203 ATQARPPPHASGPRRKLGCERAWNHSVREAGVPLGLDAPGARRGGSASRSLPLPKRPRR
                                                                                                                                          GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG
                                                                                   GGSASRSLPLPKRPRR
                                                                                                                                                                                                     ROHHAGPPSTSRPPRPWDTPCPPVYAETKHFLYSSGDKEQLRPSFLLSSLRPSLTGARRL
                                                                                                                                                                                                                                                              VETIFIGSRPWMPGTPRRLPRLPQRYWQMRPLFLELLGNHAQCPYGVLLKTHCPLRAAVT
                                                                                                                                                                                                                                                                               LFSVLNYERARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDPPPELYFVKVDVTGAYDTI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PODRLTEVIASIIKPONTYCVRRYAVVOKAAHGHVRKAFKSHVSTLTDLOPYMROFVAHL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            QETSPLRDAVVIEQSSSLNEASSGLFDVFLRFWCHHAVRIRGKSYVQCQGIPQGSILSTL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         983 NRGFKAGRNMRRKLFGVLRLKCHSLFLDLQVNSLQTVCTNIYKILLLQAYRFHACVLQLP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   FHQQVWKNPTFFLRVISDTASLCYSILKAKNAGMSLGAKGAAGPLPSEAVQWLCHQAFLL
                                                                                                                                                                                                                                                                                                                        PAAGVCAREKPQGSVAAPEEEDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS
                                                                                                                                                                                                                                                                                                                                                   PAAGVCAREKPQGSVAAPEEEDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS
                                                                                                                                                                                                                                                                                                                                                                                  RHNERR FLRNTKKFI SLGKHAKLSLQELTWKMSVRDCAWLRRSPGVGCVPAAEHRLREEI
                                                                                                                                                                                                                                                                                                                                                                                                             RHNERRFLRNTKKFISLGKHAKLSLQELTWKMSVRDCAWLRRSPGVGCVPAAEHRLREEI
                                                                                                                                                                                                                                                                                                                                                                                                                                              LAKFLHWLMSVYVVELLRSFFYVTETTFQKNRLFFYRKSVWSKLQSIGIRQHLKRVQLRE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        LSEAEVROHREARPALLTSRLRFI PKPDGLRPI VNMDYVVGARTFRREKRAERLTSRVKA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PODRLTEVIASIIKPONTYCVRRYAVVQKAAHGHVRKAFKSHVSTLTDLQPYMRQFVAHL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      QETSPLRDAVVIEQSSSLNEASSGLFDVFLRFMCHHAVRIRGKSYVQCQGIPQGSILSTL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LCSLCYGDMENKLFAGIRRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGCVVNL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RKTVVNPPVEDEALGGTAFVQMPAHGLFPWCGLLLDTRTLEVQSDYSSYARTSIRASLTF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        RKTVVNFPVEDEALGGTAFVQMPAHGLFPWCGLLLDTRTLEVQSDYSSYARTSIRASLTF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NRGFKAGRINMRRKLFGVLRLKCHSLFLDLQVNSLQTVCTNIYKILLLQAYRFHACVLQLP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LFSVLNYERARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDPPPELYFVKVDVTGAYDTI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   FHOQVWKNPTFFLRVISDTASLCYSILKAKNAGMSLGAKGAAGPLPSEAVQWLCHQAFLL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            KLTRHRVTYVPLLGSLRTAQTQLSRKLPGTTLTALEAAANPALPSDFKTILD 1132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Ä.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AAW47008 standard; protein; 1189
                                                                                                                                                                                                                                                                                          383
                                                                                                                                                                                                                                                                                                                                                    443
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1043
                     121
                                                                                                                                          241
                                                                                                                                                                                                    301
                                                                                                                                                                                                                                323
                                                                                                                                                                                                                                                            361
                                                                                                                                                                                                                                                                                                                                                                                                                503
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            563
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      623
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              863
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          923
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1081
                                                                                181
                                                                                                                                                                                                                                                                                                                        421
                                                                                                                                                                                                                                                                                                                                                                                    481
                                                                                                                                                                                                                                                                                                                                                                                                                                              541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                683
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              721
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          743
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      781
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    803
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    841
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            901
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1021
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1103
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        961
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RESULT 23
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AAW47008
ID AAW4
                                        g
                                                                              ò
                                                                                                          셤
                                                                                                                                                                   쉽
                                                                                                                                        ઠે
                                                                                                                                                                                                    à
                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              \delta
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 This polypeptide comprises human telomerase protein 2 (TP2), a novel protein of the telomerase complex. Its amino acid sequence was deduced from a composite (see AAV27876) of isolated comps 32 (see AAV27872) and TP2-15 (see AAV27875). obtained from a human colon tumour cell line LIMB63 CDNA. Expressing TP2 in a cell is used to increase telomerase activity and thus proliferation for treatment of e.g. HIV infection, AIDS and ageing disorders, while expressing an inactive mutant of TP2 (or molecule antisense to the gene) is used to decrease telomerase activity, c.g. for treatment of cancer. TR2 polypeptides can also be used to screen for agents that inhibit TP2 activity or its binding to TRIP! (see AAW61347) or telomerase RNA, potentially useful therapeutically, also to raise specific antibodies useful in immunoassays and therapeutically as inhibitors. Also contemplated are transgenic animals in which the TP2 gene has been inactivated or is overexpressed. TP2 polypeptides are administered i.v., s.c. or orally, or they are delivered from engineered calls or gene therapy vectors. (Updated on 25-WAR-2003 to correct PR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 142
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     82
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1 MPRAPRCRAVRSLLRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       23 MPRAPRCRAVRSLLRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DARPPPAAPSFRQVSCLKELVARVLQRLCERGAKNVLAFGFALLDGARGGPPEAFTTSVR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               nucleic acid encoding human telomerase protein-2 - used for alting telomerase activity, e.g. for treating cancer or acquired
1081 KLTRHRVTYVPLLGSLRTAQTQLSRKLPGTTLTALEAAANPALPSDFKTILD 1132
                                                                                                                                                                                                             TP2; human; telomerase protein 2; cancer; AIDS; ageing; therapy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            .;
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Length 1154;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DB 2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ; Score 5961; E
; Pred. No. 0;
0; Mismatches
                                                                              Ź
                                                                                                                                                                                   Human telomerase protein 2 (TP2).
                                                                         AAW61350 standard; protein; 1154
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Claim 1e; Fig 9; 150pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              100.0%;
                                                                                                                                                                                                                                                                                                                                     97WO-US021248
                                                                                                                                                                                                                                                                                                                                                               96US-00751189
                                                                                                                                                                                                                                                                                                                                                                             97US-00873039
97US-00951733
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Robinson MO;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 regulating telomerase activi
immune deficiency syndrome.
                                                                                                                                                      (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                           INC.
CANADA INC.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
Best Local Similarity 100.
Matches 1132; Conservative
                                                                                                                                        (revised)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     WPI; 1998-297946/26
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   N-PSDB; AAV27876.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence 1154 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Harrington LA,
                                                                                                                                                                                                                                                                                                                                                                                                                           AMGEN
                                                                                                                                                                                                                                           Homo sapiens
                                                                                                                                                                                                                                                                         WO9821343-A1
                                                                                                                                                                                                                                                                                                                                   13-NOV-1997;
                                                                                                                                                                                                                                                                                                                                                               15-NOV-1996;
                                                                                                                                                                                                                                                                                                                                                                                             16-OCT-1997;
                                                                                                                                   25-MAR-2003
12-OCT-1998
                                                                                                                                                                                                                                                                                                       22-MAY-1998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                19
                                                                                                       AAW61350
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            83
                                                                                                                                                                                                                                                                                                                                                                                                                           (AMGE-)
                                                                                                                                                                                                                                                                                                                                                                                                                                           (AMGE-)
                                             RESULT 22
                                                             AAW61350
 유
                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
```

1102

à

1042

960

us-10-053-758-225.rag

```
The present sequence represents a fusion protein from an example of the present invention which describes human telomerase reverse transcriptase (MTRT). The present invention also describes the following methods: (A) determining whether a test compound is a modulator of hTRT, by detecting the change in hTRT recombinant protein or polynucleotide, on administration of the compound; (B) preparation of recombinant telomerase by contacting a protein preparation of hTRT with a telomerase RNA component; (C) detection of the hTRT RNA or protein in a sample by binding a relevant probe to the sample and detecting the complex formed or in the case of RNA detection, amplifying the product and correlating the presence of complex or amplification product with presence of hTRT in the sample, and (D) increasing the product with presence of hTRT in c. the sample, and (D) increasing the product with a vertebrate cell proliferation of a vertebrate cell by increasing hTRT can be used in the manufacture of that inhibits ageing. A protein preparation of hTRT and the polynucleotide encoding hTRT can be used in the manufacture of telomerase activity can be used to treat conditions that are associated with high telomerase activity. A protein preparation of hTRT can also be with high telomerase activity. A protein preparation of hTRT can also be with high telomerase activity. A protein preparation of hTRT can also be used in the new methods
                                                                                                                    Human; telomerase reverse transcriptase; hTRT; TRT; diagnosis; prognosis;
cell proliferation; cancer; ageing; ribonucleoprotein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Pure and recombinant human Telomerase Reverse Transcriptase and variants - are useful in the diagnosis, prognosis and treatment proliferation conditions especially cancer and ageing.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Length 1189;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Chapman KB, Morin GB,
                                                                                    Glutathione-S-transferase and hTRT fusion protein 8.
                                                                                                                                                                                                                                                             /note= "enterokinase cleavage site"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ٠.
ن
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           BB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        100.0%; Score 5961;
100.0%; Pred. No. 0;
ive 0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Example 6; Page 234-235; 387pp; English.
                                                                                                                                                                                                                            Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Nakamura T,
                                                                                                                                                                                                                                                                                                                                                                                              96US-00724643.
97US-00844119.
97US-00846017.
97US-00854050.
97US-00911312.
97US-00911312.
                                                                                                                                                                                                                                                                                                                                                                 97GB-00020890
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           UNIV TECHNOLOGY CORP
                                                    (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
Best Local Similarity 100.
Matches 1132; Conservative
                                                                                                                                                                                                                                           Misc-difference 22. .23
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Lingner J,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             WPI; 1998-171633/16.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CORP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Sequence 1189 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GERON
                                                                                                                                                                                          Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    14-AUG-1997;
14-AUG-1997;
14-AUG-1997;
                                                                                                                                                                                                                                                                                                                                                                 01-OCT-1997;
                                                    13-AUG-1998
                                                                                                                                                                                                                                                                                             GB2317891-A
                                                                                                                                                                                                                                                                                                                                                                                                  01-OCT-1996;
18-APR-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                  25-APR-1997
                                                                                                                                                                                                                                                                                                                                 08-APR-1998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Andrews WH;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    09-MAY-1997
                                                                                                                                                                          Synthetic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ę,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (UYTE-)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (GERO-)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Cech
```

ë

Harley

cell

its of

NRGFKAGRNMRRKLFGVLRLKCHSLFLDLQVNSLQTVCTNIYKILLLQAYRFHACVLQLP 1020 1077 FHQQVWKNPTFFLRVISDTASLCYSILKAKNAGMSLGAKGAAGPLPSEAVQWLCHQAFLL 1080 FHQQVWKNPTFFLKVISDTASLCYSILKAKNAGMSLGAKGAAGPLPSEAVQMLCHQAFLL 1137 717 540 180 240 537 597 909 99 720 780 837 840 897 900 RKTVVNFPVEDEALGGTAFVQMPAHGLFPWCGLLLDTRTLEVQSDYSSYARTSIRASLTF 960 DARPPPAAPSFRQVSCLKELVARVLQRLCERGAKNVLAFGFALLDGARGGPPEAFTTSVR 177 237 297 300 GAAPEPERTPVGGGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG 357 360 417 420 477 PAAGVCAREKPQGSVAAPEEEDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS 480 657 777 9 PQDRLTEVIASIIKPQNTYCVRRYAVVQKAAHGHVRKAFKSHVSTLTDLQPYMRQFVAHL QETSPLRDAVVIEQSSSLNEASSGLFDVFLRFMCHHAVRIRGKSYVQCQGIPQGSILSTL RQHHAGPPSTSRPPRPWDTPCPPVYAETKHFLYSSGDKEQLRPSFLLSSLRPSLTGARRL VETIFLGSRPWMPGTPRRLPRLPQRYWQMRPLFLELLGNHAQCPYGVLLKTHCPLRAAVT PAAGVCAREKPOGSVAAPEEEDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS LAKFLHWLMSVYVVELLRSFFYVTETTFQKNRLFFYRKSVWSKLQSIGIRQHLKRVQLRE LAKFLHWLMSVYVVELLRSFFYVTETTFQKNRLFFYRKSVWSKLQSIGIRQHLKRVQLRE LSBAEVRQHREARPALLTSRLRFIPKPDGLRPIVNMDYVVGARTFRREKRAERLTSRVKA NRGFKAGRIMMRRKLFGVLRLKCHSLFLDLQVNSLQTVCTNIYKILLLQAYRFHACVLQLP MPRAPRCRAVRSLLRSHYREVLPIATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW DARPPPAAPSFROVSCLKELVARVLORLCERGAKNVLAFGFALLDGARGGPPEAFTTSVR GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG PODRLTEVIASIIKPONTYCVRRYAVVOKAAHGHVRKAPKSHVSTLTDLOPYMRQFVAHL QETSPLRDAVVIEQSSSLNEASSGLFDVFLRFMCHHAVRIRGKSYVQCQGIPQGSILSTL LCSLCYGDMENKLFAGIRRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGCVVNL MPRAPRCRAVRSLLRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW ATQARPPHASGPRRRLGCERAWNHSVREAGVPLGLPAPGARRRGGSASRSLPLPKRPRR RQHHAGPPSTSRPPRPWDTPCPPVYAETKHFLYSSGDKEQLRPSFLLSSLRPSLTGARRL VETIFICSRPWMPGTPRRLPRLPQRYWQMRPLFLBLLGNHAQCPYGVLLKTHCPLRAAVT RHNERRFLRNTKKFI SLGKHAKL, SLQELTWKMSVRDCAWLRRSPGVGCVPAAEHRLREEI LSEAEVROHREARPALLTSRIRFI PKPDGLRPIVNMDYVVGARTFRREKRAERLTSRVKA LFSVLNYERARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDPPPELYFVKVDVTGAYDTI --58 61 118 178 238 298 358 418 421 541 598 658 718 778 838 868 1021 1078 121 181 241 301 361 478 481 538 601 661 721 781 841 901 928 961 1018 g g В g 셤 g g 셤 ठे 셤 ò 8 ઠે g ò 셤 ò ò ò à 셤 ò ò δ ò g ò 셤 ò δ 음 8 g ò 용

1081 KLTRHRVTYVPLLGSLRTAQTQLSRKLPGTTLTALEAAANPALPSDFKTILD 1132

8

ö

Gaps

0;

Indels

ö

273

213

9

Gape

ö

Length 1285; IndelB 180

333 240 393 453

513 420 573 480 633 540 693 909 753 99 813 720 873 780 933 840 993 900

```
Lingner J,
                                                                                                                                                        WPI; 1998-171633/16.
                                                                                                                                      CORP
                                                            Key
Misc-difference
                                                                                                                                     GERON
                                                      Homo sapiens
                                                                                                           18-APR-1997;
25-APR-1997;
06-MAY-1997;
                                                                                                  01-OCT-1997;
                                                                                                                        14-AUG-1997;
14-AUG-1997;
14-AUG-1997;
                            13-AUG-1998
                                                                                     GB2317891-A
                                                                                            08-APR-1998
                                                                                                         01-OCT-1996
                                                                                                                     09-MAY-1997
                                                                                                                                                  Andrews WH;
                                                   Synthetic
1138
                      AAW47000;
                                                                                                                                               Cech IR,
                                                                                                                                     (GERO-)
                                                                                                                                         (UXTE-)
                                                                      Region
         RESULT 24
                                   HIS
                   셤
```

```
LCSLCYGDMENKLFAGIRRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGCVVNL 1053
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG 300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ROHHAGPPSTSRPPRPWDTPCPPVYAETKHFLYSSGDKEQLRPSFLLSSLRPSLTGARRL 360
          medicaments for inhibiting the effect of ageing or cancer. Inhibitors of telomerase activity can be used to treat conditions that are associated with high telomerase activity. A protein preparation of hTRT can also be used in the new methods
                                                                                                                                                                                                                                                                                                                                           274 SYLPNIVTDALRGSGAWGLLLRRVGDDVLVHLLARCALFVLVAPSCAYQVCGPPLYQLGA
                                                                                                                                                                                                                                   MPRAPRCRAVRSLLRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW
                                                                                                                                                                                                                                                                           154 MPRAPRCRAVRSLLRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW
                                                                                                                                                                                                                                                                                                                    DARPPPAAPSFRQVSCLKELVARVLQRLCERGAKNVLAFGFALLDGARGGPPEAFTTSVR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SYLPNTVTDALRGSGAWGLLLERRVGDDVLVHLLARCALFVLVAPSCAYQVCGPPLYQLGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ATQARPPPHASGPRRRLGCERAWNHSVREAGVPLGLPAPGARRRGGSASRSLPLPKRPRR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        514 VETIFLGSRPWMPGTPRRLPRLPQRYWQWRPLFLBLLGNHAQCPYGVLLKTHCPLRAAVT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PAAGYCAREKEVGGSVAAPEEEDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RHNERRFLRNTKKFISLGKHAKLSLQELTWKMSVRDCAWLRRSPGVGCVPAAEHRLREEI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          LSEAEVROHREARPALLTSRLRFIPKPDGLRPIVNMDYVVGARTFRREKRAERLTSRVKA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LSEAEVRQHREARPALLISRLRFIPKPDGLRPIVNMDYVVGARTFRREKRAERLTSRVKA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PQDRLTEVIASIIKPQNTYCVRRYAVVQKAAHGHVRKAFKSHVSTLTDLQPYMRQFVAHL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        RKTVVNFPVEDBALGGTAFVQMPAHGLFPWCGLLLDTRTLEVQSDYSSYARTSIRASLTF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               VETIFLGSRPWMPGTPRRLPRLPQRYWQMRPLFLELLGNHAQCPYGVLLKTHCPLRAAVT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PAAGVCAREKPQGSVAAPEEEDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LAKFLHWLMSVYVVVELLRSFFYVTETTFQKNRLFFYRKSVWSKLQSIGIRQHLKRVQLRE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         LFSVLNYERARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDPPPELYFVKVDVTGAYDTI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PODRLTEVIASIIKPONTYCVRRYAVVOKAAHGHVRKAFKSHVSTLTDLOPYMROFVAHL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   QETSPLRDAVVIEQSSSLNEASSGLFDVFLRFMCHHAVRIRGKSYVQCQGIPQGSILSTL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         LCSLCYGDMENKLFAGIRRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGCVVNL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               RHNERRFLRNTKKFISLGKHAKLSLQELTWKMSVRDCAWLRRSPGVGCVPAAEHRLREEI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          QETSPLRDAVVIEQSSSLNEASSGLFDVFLRFMCHHAVRIRGKSYVQCQG1PQGS1LSTL
                                                                                                                                                                                             1;
                                                                                                                                                         .;
73
                                                                                                                                                         DB
                                                                                                                                                      Score 5955; D
Pred. No. 0;
0; Mismatches
                                                                                                                                                  Query Match
Best Local Similarity 99.9%;
Matches 1131; Conservative
                                                                                                                Sequence 1285 AA
                                                                                                                                                                                                                                                                                                                    61
                                                                                                                                                                                                                                                                                                                                                                                                   121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          334
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      394
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       454
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      574
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     634
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    694
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   754
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               814
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                874
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          721
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               934
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               994
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          781
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         841
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      901
            8X8686
                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         qq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    The present sequence represents a fusion protein from an example of the present invention which describes human telomerase reverse transcriptase (IMTN). The present invention also describes the following methods: (A) determining whether a test compound is a modulator of HTRT, by detecting the change in HTRT recombinant protein or polynucleotide, on administration of the compound; (B) preparation of recombinant telomerase NAA component; (C) detection preparation of hTRT with a telomerase RNA component; (C) detection of the HTRT RNA or protein in a sample by binding a relevant probe to the sample and detecting the complex formed or in the case of RNA detection, amplifying the product and correlating the presence of complex or amplification product with presence of the sample; and (D) increasing the proliferation of a vertebrate cell by increase in cell vertebrate cell proliferation to create a medicament that inhibits ageing. A protein preparation of hTRT and the polynucleotide encoding hTRT can be used in the manufacture of
                                                                                                                                                                                                                                                                                        Human; telomerase reverse transcriptase; hTRT; TRT; diagnosis; prognosis; cell proliferation; cancer; ageing; ribonucleoprotein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           cell
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GB;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            itB
of c
tagged thioredoxin moiety and full length hTRT fusion protein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Harley
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Pure and recombinant human Telomerase Reverse Transcriptase and variants - are useful in the diagnosis, prognosis and treatment proliferation conditions especially cancer and ageing.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            reverse
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Morin GB,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           120. .1285
/label= hTRT
/note= "full length human telomerase
transcriptase"
                                                                                                                                                                                                                                                                                                                                                                                                                                  119. .120
/note= "enterokinase cleavage site"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Chapman KB,
                                                                                                                               Š.
                                                                                                                                                                                                                                                                                                                                                                                                                    Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Example 6; Page 223; 387pp; English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      H
                                                                                                                       AAW47000 standard; protein; 1285
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Nakamura
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    96US-00724643.
97US-0084419.
97US-0081617.
97US-00851843.
97US-00911312.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CORP.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                97GB-00020890
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  97US-00915503
                                                                                                                                                                                                          (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              UNIV TECHNOLOGY
```

120

9 9 360

420

```
480
                                                                                                                                                                                                                                                                                                                                                                                                   540
                                                                                                                                                                                      300
                                                                                                                                                                                                                                               780
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          960
                                                                                                                                                                                                 LAKFLHWLMSVYVVELLRSFPYVTETTFQKNRLFFYRKSVWSKLQSIGIRQHLKRVQLRE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DARPPPAAPSFROVSCLKELVARVLORLCERGAKNVLAFGFALLDGARGGPPEAFTTSVR
                                                                                           SYLPNTVTDALRGSGAWGLLIRRVGDDVLVHILARCALFVLVAPSCAYQVCGPPLYQLGA
                                                                                                                                                    GAAPEPERTPVGQGSWAHPGRIRGPSDRGFCVVSPARPAEEAISLEGALSGIRHSHPSVG
                                                                                                                                                                                                                                                                                                                                           PAAGVCAREKPQGSVAAPEEEDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   NRGFKAGRNMRRKLFGVLRLKCHSLFLDLQVNSLQTVCTNIYKILLLQAYRFHACVLQLP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      FHQQVWKNPTFFLKVISDTASLCYSILKAKNAGMSLGAKGAAGPLPSEAVQWLCHQAFLL
                                               DARPPPAAPSFROVSCLKELVARVLORLCERGAKNVLAFGFALLDGARGGPPEAFTTSVR
                                                                                                                                                                                                                                                                                                                                PAAGVCAREKPQGSVAAPEEEDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS
                                                                                                                                                                                                                                                                                                                                                                                         RHNERRFLRNTKKFISLGRHAKLSLQELTWRMSVRGCAWLRRSPGVGCVPAAEHRLREEI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      LSEAEVROHREARPALLTSRLRFI PKPDGLRPIVNMDYVVGARTFRREKRAERLTSRVKA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     LFSVLNYERARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDPPPELYFVKVDVTGAYDTI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PQDRLTEVIASIIKPQNTYCVRRYAVVQKAAHGHVRKAFKSHVSTLTDLQPYMRQFVAHL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             QETSPLRDAVVIBQSSSLNBASSGLFDVFLRFMCHHAVRIRGKSYVQCQGIPQGSILSTL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RKTVVNFPVEDEALGGTAFVQMPAHGLFPWCGLLLDTRTLEVQSDYSSYARTSIRASLTF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       FHOOVWKNPTFFLRVISDTASLCYSILKAKNAGMSLGAKGAAGPLPSEAVQWLCHQAFLL
              MPRAPRCRAVRSLLRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW
                                                                                                                                        ATQARPPPHASGPRRRLGCERAWNHSVREAGVPLGLPAPGARRRGGSASRSLPLPKRPRR
                                                                                                                                                                                                                                    RQHHAGPPSTSRPPRPWDTPCPPVYAETKHFLYSSGDKEQLRPSFLLSSLRPSLTGARRL
                                                                                                                                                                                                                                                                                  VET I FLGSR PWMPGTPRRLPRLPQRYWQMRPLFLELLGNHAQCPYGVLLKTHCPLRAAVT
                                                                                                                                                                                                                                                                                                                                                                             RHNERRFLRNTKKFISLGKHAKLSLQELTWKMSVRDCAWLRRSPGVGCVPAAEHRLREEI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            LCSLCYGDMENKLPAGIRRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGCVVNL
 MPRAPRCRAVRSLLRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1081 KLTRHRVTYVPLLGSLRTAQTQLSRKLPGTTLTALEAAANPALPSDFKTILD 1132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1021
                                               61
                                                                                                                  121
                                                                                                                                         181
                                                                                                                                                             181
                                                                                                                                                                                                            241
                                                                                                                                                                                                                                                          301
                                                                                                                                                                                                                                                                                                         361
                                                                                                                                                                                                                                                                                                                                                      421
                                                                                                                                                                                                                                                                                                                                                                                                                                                 541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      781
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     841
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                961
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1021
                                                                    61
                                                                                           121
                                                                                                                                                                                      241
                                                                                                                                                                                                                                   301
                                                                                                                                                                                                                                                                                  361
                                                                                                                                                                                                                                                                                                                               421
                                                                                                                                                                                                                                                                                                                                                                             481
                                                                                                                                                                                                                                                                                                                                                                                                   481
                                                                                                                                                                                                                                                                                                                                                                                                                          541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     199
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  721
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         721
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                781
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             841
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            901
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   901
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          961
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      8 8
                                                                                                            8 & 8
                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                               ద
                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  8 S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            a
                 셤
                                            6 6 6
                                                                                                                                                                             Š
                                                                                                                                                                                                    원장
                                                                                                                                                                                                                                                                                Š
                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                        ઠે
                                                                                                                                                                                                                                                                                                                                                                            8
                                                                                                                                                                                                                                                                                                                                                                                                                õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             용
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                ö
RKTVVNFPVEDEALGGTAFVQMPAHGLFPWCGLLLDTRTLEVQSDYSSYARTSIRASLTF 1113
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    wew imposted numan telomerase catalytic sub-unit gene - used to develop products for increasing or reducing the life span of cells such as cancer cells or transformed cells.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               The present sequence represents the catalytic subunit of a human telomerase holoenzyme. Disruption of the telomerase gene alters telomere maintenance. The DNA is essential for telomerase activity, and the protein is physically associated with telomerase and a constituent of active telomerase complex. The products can be used for increasing or reducing the lifespan of cells such as cancer cells or transformed cells. They can also be used in the diagnosis and treatment of malignancies. In addition, cells with a longer lifespan can be transplanted into or grafted onto an individual (e.g. as skin grafts, as systems for delivery of therapeutic proteins, such as hormones and enzymes), to whom they provide therapeutic benefit
                    Catalytic subunit; human; telomerase; telomere maintenance; diagnosis;
                                                                    FHQQVWKNPTFFLRVISDTASLCYSILKAKNAGMSLGAKGAAGPLPSEAVQWLCHQAFLL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gaps
                                                                                                                             KLTRHRVTYVPLIGSLRTAQTQLSRKLPGTTLTALEAAANPALPSDFKTILD 1132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Indels
                                                                                                                                                                                                                                                                      catalytic subunit referred to as hEST2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ..
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Pred. No. 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  99.9%; Score 5954; 99.9%; Pred. No. 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (WHED ) WHITEHEAD INST BIOMEDICAL RES
                                                                                                                                                                                                  Z
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Weinberg
                                                                                                                                                                                                 AAW71376 standard; protein; 1132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ó
                                                                                                                                                                                                                                                                                                                                                                                                                       97US-0038750P.
97US-0047151P.
97US-0054549P.
97US-0055762P.
97US-0064322P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Claim 5; Fig 6; 96pp; English
                                                                                                                                                                                                                                                                                                                                                                                                   98WO-US003404
                                                                                                                                                                                                                                              (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Σ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
Best Local Similarity 99.9
Matches 1131; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Meyerson
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          WPI; 1998-495367/42.
N-PSDB; AAV60320.
                                                                                                                                                                                                                                                                                                         treatment; cancer
                                                                                                                                                                                                                                                                      telomerase
                                                                                                                                                                                                                                                                                                                                                      WO9837181-A2
                                                                                                                                                                                                                                                                                                                                sapiens
                                                                                                                                                                                                                                                                                                                                                                                                   20-FEB-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                   20-MAY-1997;
01-AUG-1997;
14-AUG-1997;
30-OCT-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     £
                                                                                                                                                                                                                                              04-DEC-1998
                                                                                                                                                                                                                                                                                                                                                                             27-AUG-1998
                                                                                                                                                                                                                                                                                                                                                                                                                         20-FEB-1997;
                                                                    1021
                                                                                                                  1081
                                                                                                                                      1234
                                                                                                                                                                                                                       AAW71376
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Counter
                                                                                                                                                                                                                                                                       Human
                                                                                                                                                                                                                                                                                                                                Homo
                                                                                                                                                                                                  g
                     ò
                                           셤
                                                                 ò
                                                                                                                 ò
                                                                                                                                   셤
```

540

480

909

600 99 99 720 720 780 1020

```
1020
                                                                                                                                 300
                                                                                                                                         9
                                                                                                                                                                               360
                                                                                                                                                                                                                            420
                                                                                                                                                                                                                                                   420
                                                                                                                                                                                                                                                                           480
                                                                                                                                                                                                                                                                                                480
                                                                                                                                                                                                                                                                                                                       540
                                                                                                                                                                                                                                                                                                                                               540
                                                                                                                                                                                                                                                                                                                                                                      9
                                                                                                                                                                                                                                                                                                                                                                                           600
                                                                                                                                                                                                                                                                                                                                                                                                                    99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 720
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        720
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              780
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            840
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    840
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1080
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     780
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   960
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DARPPPAAPSFRQVSCLKELVARVLQRLCERGAKNVLAFGFALLDGARGGPPEAFTTSVR
                                               ATQARPPPHASGPRRELGCERAWNHSVREAGVPLGLPAPGARRRGGSASRSLPLPKRPRR
                                                                                            GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG
                                                                                                                                                                                                                       VET1 FLGSR PWMPGTPRRLPRLPQRYWQMRPLFLELLGNHAQCPYGVLLKTHCPLRAAVT
                                                                                                                                                                                                                                       RQHHAGPPSTSRPPRPWDTPCPPVYAETKHFLYSSGDKEQLRPSFLLSSLRPSLTGARRL
                                                                                                                                                                                                                                                                      PAAGVCAREKPQGSVAAPEEEDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS
                                                                                                                                                                                                                                                                                                                  RHNERRFLRNTKKF1SLGKHAKLSLQELTWKMSVRDCAWLRRSPGVGCVPAAEHRLREET
                                                                                                                                                                                                                                                                                                                                                                 LAKFLHWLMSVYVVELLRSFFYVTETTFQKNRLFFYRKSVWSKLQSIGIRQHLKRVQLRE
                                                                                                                                                                                                                                                                                                                                                                                                               LSEAEVROHREARPALLTSRLRFIPKPDGLRPIVNMDYVVGARTFRREKRAERLTSRVKA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PODRLTEVIASIIKPONTYCVRRYAVVOKAAHGHVRKAFKSHVSTLTDLOPYNROFVAHL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       QETSPLRDAVVIEQSSSLNEASSGLFDVFLRFMCHHAVRIRGKSYVQCQGIPQGSILSTL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     LCSLCYGDMENKLFAGIRRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGCVVNL
                                                                                                                                                                                                                                                                                                                                                                                                                                                              LFSVLNYERARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDPPPELYFVKVDVTGAYDTI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              LFSVLNYERARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDPPPELYFVKVDVTGAYDTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PODRLTEVIASIIKPONTYCVRRYAVVQKAAHGHVRKAFKSHVSTLTDLQPYMRQFVAHL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       RKTVVNFPVEDEALGGTAFVQMPAHGLFPWCGLLLDTRTLEVQSDYSSYARTSIRASLTF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 FHQQVWKNPTFFLRVISDTASLCYSILKAKNAGMSLGAKGAAGPLPSEAVQMLCHQAFLL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NRGFKAGRNMRRKLFGVLRLKCHSLFLDLQVNSLQTVCTNI YKILLLQAYRFHACVLQLP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1021 FHQQVWKNPTFFLRVISDTASLCYSILKAKNAGMSLGAKGAAGPLPSEAVQWLCHQAFLL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             KLTRHRVTYVPLLGSLRTAQTQLSRKLPGTTLTALEAAANPALPSDFKTILD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           61
                                                       121
                                 121
                                                                               181
                                                                                                    181
                                                                                                                            241
                                                                                                                                                                         301
                                                                                                                                                                                                                         361
                                                                                                                                                                                                                                                                                            421
                                                                                                                                                                                                                                                                      421
                                                                                                                                                                                                                                                                                                                                           481
                                                                                                                                                                                                                                                                                                                                                                 541
                                                                                                                                                                                                                                                                                                                     481
                                                                                                                                                                                                                                                                                                                                                                                         541
                                                                                                                                                                                                                                                                                                                                                                                                                601
                                                                                                                                                                                                                                                                                                                                                                                                                                     601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 721
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      841
                                                                                                                                                                                                                                                                                                                                                                                                                                                              661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         721
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         781
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               781
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              841
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     901
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            901
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   961
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           961
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1021
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1081
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1081
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RESULT 27
                                                 셤
                         ò
                                                                            ò
                                                                                              g
                                                                                                                     ò
                                                                                                                                                셤
                                                                                                                                                                         ò
                                                                                                                                                                                            엄
                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                  ઠે
                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                          ö
                                                                                                                                                                                                                                                                                                                                                                                    d
                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      염
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               This sequence is the human telomerase of the invention. Primers that amplify the telomerase coding sequence can be used in a method for diagnosing cancer in a patient. The telomerase can be used for detection, diagnosis and drug screening. Inhibitors of telomerase activity can be used to treat cancers such as melanomas, other skin cancers, cused to treat cancers such as melanomas, other skin cancers, inymphomas, osteosarcomas or smooth muscle cell hyperplanias or skin inymphomas, osteosarcomas or smooth muscle cell hyperplanias or skin cycowths. Enhancers of telomerase may be used to stimulate stem cell could be administered in the bone marrow transplant context). As well, in many tissues have stem cells. Proliferation of these cells may be useful in wound healing, hair growth, treatment of disease such as Wilm's tumour, organ regeneration or differentiation after injury or diseases,
                                                                                                                                                                           neuroblastoma; breast carcinoma; colon carcinoma; lymphoma; osteosarcoma; smooth muscle cell hyperplasia; stem cell proliferation; Wilm's tumour; stem cell differentiation; organ regeneration; organ differentiation.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DARPPPAAPSFROVSCLKELVARVLORLCERGAKOVLAFGFALLDGARGGPPEAFTTSVR 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 human; cancer; diagnosis; melanoma; skin cancer; leukaemia;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1 MPRAPRCRAVRSLLRSHYREVLPLATFVRRLGPQGWRLVQRGDPAFRALVAQCLVCVPW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              telomerase genes - used to develop products organ regeneration, nerve cell or brain cell or bone marrow transplantation.
;
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Length 1132;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     99.9%; Score 5954; DB 99.9%; Pred. No. 0; ive 0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           New isolated vertebrate telomerase genes
                                                                         Ş
                                                                                                                                           Human telomerase protein sequence
                                                                         protein; 1132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Claim 19; Fig 1; 134pp; English.
                                                                                                                                                                                                                                                                                                                      97US-0051410P.
97US-0053018P.
97US-0053329P.
97US-0054642P.
                                                                                                                                                                                                                                                                                                                                                                                           (CAMB-) CAMBIA BIOSYSTEMS LLC
                                                                                                                                                                                                                                                                                                                                                                      97US-0058287P.
                                                                                                                                                                                                                                                                                                 98WO-US013835
                                                                                                                     (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
Best Local Similarity 99.9
Matches 1131; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       treating cancers or for growth following injury
                                                                                                                                                                                                                                                                                                                                                                                                                    ü
                                                                                                                                                                                                                                                                                                                                                                                                                                        WPI; 1999-106060/09.
N-PSDB; AAX18254.
                                                                      AAY00627 standard;
                                                                                                                                                                                                                                                                                                                                                                                                                    Bowtell
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Seguence 1132 AA;
                                                                                                                                                                                                                                                 WO9901560-A1
                                                                                                                                                                                                                             Homo sapiens
                                                                                                                                                                                                                                                                                                                                  21-JUL-1997;
21-JUL-1997;
04-AUG-1997;
09-SEP-1997;
                                                                                                                    26-JUL-1999
                                                                                                                                                                                                                                                                                                01-JUL-1998;
                                                                                                                                                                                                                                                                                                                       01-JUL-1997
                                                                                                                                                                                                                                                                           14-JAN-1999
                                                                                              AAY00627;
                                                                                                                                                                                                                                                                                                                                                                                                                  Kilian A,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                61
                                                           AAY0062
                                                RESULT
```

ò g

```
1080
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NRGFKAGRNWRRKLFGVLRLKCHSLFLDLQVNSLQTVCTNIYKILLLQAYRFHACVLQLP 1020
                                                                                                                                                                                                                                                                                              420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     720
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      720
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  780
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            QETSPLRDAVVIEQSSSLNEASSGLFDVFLRFMCHHAVRIRGKSYVQCQGIPQGSILSTL 840
                                                                                                                                    300
                                                                                                                                                                                                480
                                                                                                                                                                                                                                                                                                                                                                           480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   600
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       780
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               900
                                                                                                                                                                                                                                                                              361 VETIFLGSRPWMPGTPRRLPRLPQRYWWMRPLFLELLGNHAQCPYGVLLKTHCPLRAAVT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  LSEAEVRQHREARPALLTSRLRFI PKPDGLRPI VNMDYVVGARTFRREKRAERLTSRVKA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PQDRLTEVIASIIKPQNTYCVRRYAVVQKAAHGHVRKAFKSHVSTLTDLQPYMRQFVAHL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     FHQQVWKNPTFFLRVISDTASLCYSILKAKNAGMSLGAKGAAGPLPSEAVQMLCHQAFLL
                                              GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG
                                                                                                                                        GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG
                                                                                                                                                                                                                                                                                                                                                             PAAGVCAREKPQGSVAAPEEEDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   LSEAEVRQHREARPALLTSRLRFIPKPDGLRPIVNMDYVVGARTFRREKRAERLTSRVKA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              LFSVLNYERARRPGILGASVLGLDDIHRAWRTFVLRVRAQDPPPELYFVKVDVTGAYDTI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PODRLTEVIASIIKPONTYCVRRYAVVOKAAHGHVRKAFKSHVSTLTDLQPYMRQFVAHL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 LCSLCYGDMENKLFAGIRRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGCVVNL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                RKTVVNFPVEDEALGGTAFVQMPAHGLFPWCGLLLDTRTLEVQSDYSSYARTSIRASLTF
                      ATQARPPHASGPRRKLGCERAWNISVREAGVPLGLPAPGARRRGGSASRSLPLPKRPRR
                                                                                                                                                                                RQHHAGPPSTSRPPRPWDTPCPPVYAETKHFLYSSGDKEQLRPSFLLSSLRPSLTGARRL
                                                                                                                                                                                                                                                                                                                                                                                                                    RHNERRFLRNTKKF1SLGKHAKLSLQELTWKMSVRDCAWLRRSPGVGCVPAAEHRLREE1
                                                                                                                                                                                                                                                                                                                                                                                                                                          RHNERRFLRNTKKFISLGKHAKLSLQELTWKMSVRGCAWLRRSPGVGCVPAAEHRLREEI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LAKFLHWIMSVYVVELLRSFFYVTETTFQKNRLFFYRKSVWSKLQSIGIRQHLKRVQLRE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     LFSVLNYERARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDPPPELYFVKVDVTGAYDTI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             LCSLCYGDMENKLFAGIRRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGCVVNL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        RKTVVNFPVEDEALGGTAFVOMPAHGLFPWCGLLLDTRTLEVOSDYSSYARTSIRASLTF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NRGFKAGRNWRRKLFGVLRLKCHSLFLDLQVNSLQTVCTNIYKILLLQAYRFHACVLQLP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PHOQVWKNPTFFLRVISDTASLCYSILKAKNAGMSLGAKGAAGPLPSEAVQWLCHQAFLL
                                                                                                                                                                                                                                                           VET1FLGSRPWMPGTPRRLPRLPQRYWQMRPLFLELLGNHAQCPYGVLLKTHCPLRAAVT
                                                                                                                                                                                                                                                                                                                                       PAAGVCAREXPQGSVAAPEEEDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             KLTRHRVTYVPLLGSLRTAQTQLSRKLPGTTLTALEAAANPALPSDFKTILD 1132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  KLTRHRVTYVPLLGSLRTAQTQLSRKLPGTTLTALBAAANPALPSDFKTILD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Ź
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 protein; 1132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               22-SEP-1999 (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AAY28401 standard;
                                                                                                                                                                                                                     301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   841
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            901
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          961
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1081
                                                          181
                                                                                                                                        241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1021
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1021
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1081
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AAY28401;
                      181
                                                                                                                                                                              301
                                                                                                                                                                                                                                                           361
                                                                                                                                                                                                                                                                                                                                       421
                                                                                                                                                                                                                                                                                                                                                                             421
                                                                                                                                                                                                                                                                                                                                                                                                                    481
                                                                                                                                                                                                                                                                                                                                                                                                                                                        481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  721
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         721
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                781
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    781
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             841
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        901
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     961
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AAY28401
                                                  셤
                                                                                                                             셤
                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SXXXX
                                                                                                 à
                                                                                                                                                                          ò
                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       This sequence is a truncated human telomerase of the invention. Primers that amplify the telomerase coding sequence can be used in a method for diagnosing cancer in a patient. The telomerase can be used for detection, diagnosis and drug screening. Inhibitors of telomerase activity can be used to treat cancers such as melanomas, other skin cancers, neuroblastomas, breast carcinomas, colon carcinomas, leukaemias, lymphomas, osteosarcomas or smooth muscle cell hyperplasias or skin growths. Enhancers of telomerase may be used to stimulate stem cell proliferation and differentiation (expansion of hamatopoietic stem cells could be administered in the bone marrow transplant context). As well, many tissues have stem cells. Proliferation of these cells may be useful in wound healing, hair growth, treatment of disease such as Wilm's tumour, organ regeneration or differentiation after injury or diseases, nerve cell or brain cell growth following injury
                                                                                                                                                        Telomerase; human; cancer; diagnosis; melanoma; skin cancer; leukaemia; neuroblastoma; breast carcinoma; colon carcinoma; ortooma; osteosarcoma; smooth muscle cell hyperplasis; stem cell proliferation; Wilm's tumour; stem cell differentiation; organ regeneration; organ differentiation.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          New isolated vertebrate telomerase genes - used to develop products for treating cancers or for organ regeneration, nerve cell or brain cell growth following injury or bone marrow transplantation.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MPRAPRCRAVRSLLRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SYLPNTYTDALRGSGAWGLLLRRVGDDVLVHLLARCALFVLVAPSCAYQVCGPPLYQLGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SYLPNTVTDALRGSGAWGLLLRRVGDDVLVHLLARCALFVLVAPSCAYQVCGPPLYQLGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1 MPRAPRCRAVRSLLRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DARPPPAAPSFROVSCLKELVARVLORLCERGAKNVLAFGFALLDGARGGPPEAFTTSVR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DB 2; Length 1132;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              99.9%; Score 5954; Dilarity 99.9%; Pred. No. 0; Conservative 0; Mismatches
                                                                                                                   Truncated telomerase protein sequence
    Ź
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Claim 4; Fig 11f-i; 134pp; English.
standard; protein; 1132
                                                                                                                                                                                                                                                                                                                                                                                                                                  97US-0051410P.
97US-0053018P.
97US-0053329P.
97US-0054642P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (CAMB-) CAMBIA BIOSYSTEMS LLC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               97US-0058287P
                                                                                                                                                                                                                                                                                                                                                                                               98WO-US013835
                                                                             (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ä
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   WPI; 1999-106060/09.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Best Local Similarity
Matches 1131; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     N-PSDB; AAX18266.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ä
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence 1132
                                                                                                                                                                                                                                                         Homo sapiens.
Synthetic.
                                                                                                                                                                                                                                                                                                                  WO9901560-A1
                                                                                                                                                                                                                                                                                                                                                                                             01-JUL-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               09-SEP-1997;
                                                                               26-JUL-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                        21-JUL-1997
21-JUL-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                      01-JUL-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             04-AUG-1997
                                                                                                                                                                                                                                                                                                                                                         14-JAN-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ä
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 61
  AAY00638
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Kilian
```

8 8 8 8

ઠ

protein sequence.

EST2]

```
EST2; proliferative capacity; cellular proliferation; decubitus ulcer; telomerase-activating therapeutic agent; cell life-span extension; venous disease; venous stasis ulcer; excessive pressure; arterial ulcer; tissue regeneration enhancer; atherosclerosis; therapy.
                                                                                                                                                                                                                                                                                                                                                                                      (COLD-) COLD SPRING HARBOR LAB
                                                                                                                                                                                                                                                                                              98US-0071220P.
98US-0071455P.
98US-00063657.
                                                                                                                                                                                                                                                      99WO-US000682
                                                                                                                                                                                                                                                                                                                                                                                                                                     Wang J,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                WPI; 1999-444196/37
                                                                                                                                                                                                                                                                                              12-JAN-1998;
13-JAN-1998;
21-APR-1998;
                                                                                                                    sapiens
                                                                                                                                                            WO9935243-A2
                                                                                                                                                                                                                                                    12-JAN-1999;
                                                                                                                                                                                                         15-JUL-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                     Hannon GJ,
                                                                                                                    Homo
```

Increasing proliferative capacity of cells useful for promoting wound

Claim 3; Page 65-70; 73pp; English.

This sequence is the human EST2 protein, and can be used in the method of the invention. The method is for increasing the proliferative capacity of cells, and comprises contacting the cell with a telemeraee-activating the cells, and comprises contacting the cell with a telemeraee-activating therapeutic agent (TATA). The method can be used for extending the lifect of the axension of skin or other epithelial cell can be used for e.g. the axtension of skin or other epithelial cell cultures or grafts, the expansion of mesenchymal cell cultures or grafts, can be applied to e.g. neuronal, haematopoietic, epithelial, pancreatic, can be applied to e.g. neuronal, haematopoietic, epithelial, pancreatic, chondrocytic and ostecoytic stem and progenitor cells in in cyvio, in vitro or ex vivo protocols. The methods can be used for cyvio, in vitro or ex vivo protocols. The methods can be used for cyvio, in vitro or ex vivo protocols. The methods can be used for cyvious preasure inflammation or inritation or ulcers resulting from e.g. surgery, burns, inflammation or inritation or ulcers resulting from e.g. venous disease cyvious stasis ulcers), excessive pressure (decubitus ulcers) or arterial collers an also be used for incersor macular degeneration caused by accumulation of the skin through loss of extracellular matrix homeostasis in dermal factor in retinal pigmented potaliferative capacity and overexpression of hypertensive and thrombotic collerative capacity and overexpression of hypertensive and thrombotic factors in endothelial cells. Expanded populations of normal or allogenetic cell and gene therapy. They can also be used for prolonging the lifespan of a culture of normal cells or tissue being used to secrete two

Seguence 1132 AA

```
ô
                                                                      120
                                                                             9
                                     9
                                           MPRAPRCRAVRSLLRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW
                                                                  DARPPPAAPSFRQVSCLKELVARVLQRLCERGAKNVLAFGFALLDGARGGPPEAFTTSVR
                   ö
 Length 1132;
                  1; Indels
 2;
 8
                0; Mismatches
Score 5954;
Pred. No. 0;
99.98;
              Matches 1131; Conservative
        Local Similarity
                                                                    61
Query Match
                                                셤
                                 ठ
                                                                  ઠ
                                                                               g
```

1020 240 360 1080 300 420 780 900 480 480 540 540 900 600 9 99 720 720 780 840 840 900 960 SYLPNIVIDALRGSGAWGLILIRRYGDDVLVHLLARCALFVLVAPSCAYQVCGPPLYQLGA RQHHAGPPSTSRPPRPWDTPCPPVYAETKHFLYSSGDKEQLRPSFLLSSLRPSLTGARRL GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG **ATQARPPHASGPRRILGCERAWNHSVREAGVPLGLPAPGARRRGGSASRSLPLPKRPRR** 421 PAAGVCAREKPQGSVAAPEEEDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS LAKFLHWLMSVYVVELLRSFFYVTETTFQKNRLFFYRKSVWSKLQSIGIRQHLKRVQLRE QETSPLRDAVVIEQSSSLNEASSGLFDVFLRFMCHHAVRIRGKSYVQCQGIPQGSILSTL VETIFIGSR PWWPGTPRRLPRLPQRYWQMRPLFLELLGNHAQCPYGVLLKTHCPLRAAVT PAAGVCAREKPQGSVAAPEEEDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS RHINERRFLRNTKKFISLGKHAKLSLQELTWKMSVRDCAWLRRSPGVGCVPAAEHRLREEI LSBAEVROHREARPALLTSRLRFIPKPDGLRPIVNMDYVVGARTFRREKRAERLTSRVKA PQDRLTEVIASIIKPONTYCVRRYAVVOKAAHGHVRKAFKSHVSTLTDLQPYMRQFVAHL LCSLCYGDMENKLFAGIRRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGCVVNL RKTVVNFPVEDEALGGTAFVQMPAHGLFPWCGLLLDTRTLEVQSDYSSYARTSIRASLTF NRGPKAGRNMRRKLFGVLRLKCHSLFLDLQVNSLQTVCTNIYKILLLQAYRFHACVLQLP LFSVLNYERARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDPPPELYFVKVDVTGAYDTI FHQQVWKNPTFFLRVISDTASLCYSILKAKNAGMSLGAKGAAGPLPSEAVQWLCHQAFLL 1021 FHQQVWRANPTFFLRVISDTASLCYSILKARNAGMSLGARGAAGPLPSEAVQMLCHQAFLL 1132 KLTRHRVTYVPLLGSLRTAQTQLSRKLPGTTLTALEAAANPALPSDFKTILD 1132 121 181 181 241 241 301 301 361 481 961 1 421 481 541 541 601 601 661 721 781 901 661 721 841 781 841 901 1021 1081 1081 D D 셤 à 원 ò ò g ઠ 유 원 ઠ δ g Š g ò ద ò g ò 셤 ò g ò 엄 g ð 엄 셤 ò a ઠે ò

RESULT 29 AAY96566 ID AAY96566 standard; protein; 1132

ġ

```
nEST2; telomerase; catalytic subunit; reverse transcriptase; life-span; retinoblastoma; p53; tumour suppressor; inhibitor; arteriosclerosis; proliferation; immortal; tumour therapy; macular degeneration; activator. INN4.
                     nEST2, a human telomerase catalytic subunit homologue
                                                             WO200031238-A2.
                                                    Homo sapiens
                                                                               24-NOV-1999;
             12-SEP-2000
                                                                      02-JUN-2000
```

99WO-US027907

This protein, designated hEST2, is a human telomerase catalytic subunit homologue of yeast EST2p and Euplotes p123. hEST2 is a member of the theomologue of yeast EST2p and Euplotes p123. hEST2 is a member of the traversor methods and reagants for extending the life-span, e.g. the number of mitotic divisions, of a cell. The method relies on activation of a telomerase activity and inhibition of one or both of a retinoblastoma (Rb)/INK4 pathway or a p53 pathway. Phosphorylation of Rb by cyclin-dependent kinases, cdk4 and cdk6, releases the cells into the division cycle. Binding of INK4 family members, e.g. the tumour suppressor p16INK4a, inhibits kinase activity and results in growth arrest. Rb inactivations can selectively and reversibly inactivate an Rb/INK4 pathway, especially an Rb/p16INK4a pathway. The oncoprotein MDM2 is a cellular inhibitor of an Rb/p16INK4a pathway. The oncoprotein MDM2 is a cellular inhibitor of methods. Other molecules which can be used include can also be used in the methods of the methods are useful for increasing the proliferative capacity of residues K22, R24, H95 and/or D97. Additional constructs include a papilloma virus E7 protein, or other viral oncoprotein which bypasses Rb and/or D53. Antisense constructs of the Rb and p16INK4a genes may also be used. The methods are useful for increasing the proliferative capacity of cells. The cells are subsequently of use in pharmaceutical and cosmetic preparations used to treat conditions related to (premature) ageing, e.g. macular degeneration and arteriosclerosis. The cells can also be used to physiological aspects of growth and differentiation. Long lived (immortal) cells could also be of use in the production of normal or genetically engineered biotechnology products New method for increasing the proliferative capacity of cell lines comprises administering agents reversibly activating telomerase activity and reversibly inactivating Rb/INk4 and/or p53 pathways useful in Claim 14; Page 116-119; 123pp; English treating age related diseases 98US-0109891P. 99US-0120549P. Beach DH; (GENE-) GENETICA INC. WPI; 2000-400055/34. Sequence 1132 AA; N-PSDB; AAA29388 17-FEB-1999; 25-NOV-1998; Hannon GJ,

ö Length 1132; 1; Indels DB Score 5954; DB Pred. No. 0; 0; Mismatches ; 99.98; Conservative Similarity Query Match Best Local Simi Matches 1131;

ઠે a

1080 480 480 600 900 9 720 720 780 780 900 GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG LCSLCYGDMENKLFAGIRRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGCVVNL DARPPPAAPSFRQVSCLKELVARVLQRLCERGAKNVLAFGFALLDGARGGPPEAFTTSVR SYLPNTVTDALRGSGAWGLLLRRVGDDVLVHLLARCALFVLVAPSCAYQVCGPPLYQLGA ATQARPPHASGPRRRLGCERAWNHSVREAGVPLGLPAPGARRRGGSASRSLPLPKRPRR ATQARPPPHASGPRRRLGCERAWMSVREAGVPLGLPAPGARRRGGSASRSLPLPRRPRR GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG ROHHAGPPSTSRPPRPWDTPCPPVYAETKHFLYSSGDKEQLRPSFLLSSLRPSLTGARRL VETIFLGSRPWMPGTPRRLPRLPQRYWQMRPLFLELLGNHAQCPYGVLLKTHCPLRAAVT PAAGVCAREKPQGSVAAPEEEDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS PAAGVCAREKPOGSVAAPEEEDTDPRRLVQLIRQHSSPWQVYGFVRACLRRLVPPGLWGS RHNERRFLRNTKKFISLGKHAKLSLQELTWKMSVRDCAWLRRSPGVGCVPAAEHRLREEI RHNERRFLRNTKKFISLGKHAKLSLQELTWKMSVRGCAWLRRSPGVGCVPAAEHRLREEI LAKFLHWLMSVYVVELLRSFFYVTETTFQKNRLFFYRKSVWSKLQSIGIRQHLKRVQLRE LAKFLHWIMSVYVVBLLRSFFYVTETTFQKNRLFFYRKSVWSKLQSIGIRQHLKRVQLRE LFSVLNYERARRPGLIGASVLGLDDIHRAWRTFVLRVRAQDPPPELYFVKVDVTGAYDTI OETSPLRDAVVIEOSSSLNEASSGLFDVFLRFMCHHAVRIRGKSYVOCOGIPOGSILSTL QETSPLKDAVVIEOSSSLNEASSGLFDVFLRFMCHHAVRIRGKSYVQCQGIPQGSILSTL LCSLCYGDMENKLFAGIRRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGCVVNL RKTVVNFPVEDEALGGTAFVQMPAHGLFPWCGLLLDTRTLBVQSDYSSYARTSIRASLTF NRGFKAGRNWRRKLFGVLRLKCHSLFLDLOVNSLQTVCTNIYKILLLQAYRFHACVLQLP NRGFKAGRNWRRKLFGVLRLKCHSLFLDLQVNSLQTVCTNIYKILLLQAYRFHACVLQLP FHOOVWKNPTFFLRVISDTASLCYSILKAKNAGMSLGAKGAAGPLPSEAVQWLCHQAFLL FHQQVWKNPTFFLKVISDTASLCYSILKAKNAGMSLGAKGAAGPLPSEAVQWLCHQAFLL VETIFLGSRPWMPGTPRRLPRLPQRYWQMRPLFLELLGNHAQCPYGVLLKTHCPLRAAVT PQDRLTEVIASIIKPQNTYCVRRYAVVQKAAHGHVRKAFKSHVSTLTDLQPYMRQFVAHL LFSVLNYERARRPGLLGASVLGLDD1HRAWRTFVLRVRAQDPPPELYFVKVDVTGAYDT1 KLTRHRVTYVPLLGSLRTAQTQLSRKLPGTTLTALEAAANPALPSDFKTILD 1132 541 1021 1081 121 181 241 241 301 301 361 421 481 481 541 601 661 721 901 901 1021 181 361 421 601 661 721 781 781 841 841 961 961 ò 셤 ò 요 ò 요 ò 셤 ò g ò 셤 ઠે g ò g δ 셤 ò 셤 ò g g ò 요 à g à g ð ર્જ ò 셤

```
420
                                                                                                                            480
                                                                                                                                                            480
                                                                                                                                                                                            540
                                                                                                                                                                                                                           540
                                                                                                                                                                                                                                                          900
                                                                                                                                                                                                                                                                                        600
                                                                                                                                                                                                                                                                                                                        99
                                                                                                                                                                                                                                                                                                                                                        9
                                                                                                                                                                                                                                                                                                                                                                                        720
                                                                                                                                                                                                                                                                                                                                                                                                                                                       780
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      780
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     840
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Immortal porcine cell; telomerase reverse transcriptase; epithelial cell; tetrine andometrial glandular tissue; virus quantification; virus production; porcine reproductive and reepiratory syndrome virus; PRRSV; toxicity evaluation; human; hTERT; enzyme.
                  301 RQHHAGPPSTSRPPRPWDTPCPPVYAETKHFLYSSGDKEQLRPSFLLSSLRPSLTGARRL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 721 PODRLTEVIASIIKPONTYCVRRYAVVOKAAHGHVRKAFKSHVSTLTDLOPYMRQFVAHL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PAAGVCAREKPQGSVAAPEEEDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS
                                                                                                                                                                                                                                                                              541 LAKFLHWLMSVYVVELLRSFFYVTETTFØKNRLFFYRKSVMSKLØSIGIRQHLKRVQLRE
                                                                                                                                                                                                                                                                                                                                               601 LSEABVRQHREARPALLTSRLRFIPKPDGLRPIVNMDYVVGARTFRREKRAERLTSRVKA
                                                                                                                                                                                                                                                          LAKFLHWIMSVYVVELLRSFFYVTETTFOKNRLFFYRKSVWSKLOSIGIRQHLKRVQLRE
                                                                                                                                                                                                                                                                                                                        LSEAEVROHREARPALLTSRLRFIPKPDGLRPIVNMDYVVGARTFRREKRAERLTSRVKA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  LCSLCYGDMENKLFAGIRRDGLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGCVVNL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1021 FHQQVWKNPTFFLRVISDTASLCYSILKAKNAGMSLGAKGAAGPLPSEAVQWLCHQAFLL
                                                                                                                            PAAGVCAREKPQGSVAAPEEEDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS
                                                                                                                                                                                          RHNERRFLRNTKKFISLGKHAKLSLQELTWKMSVRDCAWLRRSPGVGCVPAAEHRLREEI
                                                                                                                                                                                                              RHNERRFLRNTKKFISLGKHAKLSLQELTWKMSVRGCAWLRRSPGVGCVPAAEHRLREEI
                                                                                                                                                                                                                                                                                                                                                                                      LPSVLNYERARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDPPPELYFVKVDVTGAYDTI
                                                                                                                                                                                                                                                                                                                                                                                                        LFSVLNYERARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDPPFLYFVKVDVTGAYDTI
                                                                                                                                                                                                                                                                                                                                                                                                                                                      PODRLTEVIASIIKPONTYCVRRYAVVQKAAHGHVRKAFKSHVSTLTDLQPYMRQFVAHL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  QETSPLRDAVVIEQSSSLNEASSGLFDVFLRFMCHHAVRIRGKSYVQCQGIPQGSILSTL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                RKTVVNFPVEDEALGGTAFVQMPAHGLFPWCGLLLDTRTLEVQSDYSSYARTSIRASLTF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    NRGFKAGRNMRRKLFGVLRLKCHSLFLDLQVNSLQTVCTNIYKI LLLQAYRFHACVLQLP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NRGFKAGRUMRRKLFGVLRLKCHSLFLDLQVNSLQTVCTNIYKILLLLQAYRFHACVLQLP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              FHOOVWKNPTFFLRVISDTASLCYSILKAKNAGMSLGAKGAAGPLPSEAVQWLCHQAFLL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           KLTRHRVTYVPLLGSLRTAQTQLSRKLPGTTLTALEAAANPALPSDFKTILD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Human telomerase reverse transcriptase (hTERT).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ź
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           standard, protein, 1132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         29-JAN-2004
                                                              361
                                                                                            361
                                                                                                                            421
                                                                                                                                                          421
                                                                                                                                                                                            481
                                                                                                                                                                                                                                                        541
                                                                                                                                                                                                                                                                                                                                                                                                                      661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1021
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ADE40482;
301
                                                                                                                                                                                                                        481
                                                                                                                                                                                                                                                                                                                        601
                                                                                                                                                                                                                                                                                                                                                                                        661
                                                                                                                                                                                                                                                                                                                                                                                                                                                      721
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  781
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  841
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  841
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                901
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              901
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              961
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              961
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1081
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1081
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  781
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ADE40482
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RESULT 31
ADE40482
                                                                                                                                                                                                                                                                                    g
                    g
                                                            ઠે
                                                                                          ద
                                                                                                                        ò
                                                                                                                                                     유
                                                                                                                                                                                                                   유
                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                        8
                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                    Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ó
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DARPPPAAPSFRQVSCLKELVARVLQRLCERGAKNVLAFGFALLDGARGGPPEAFTTSVR 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    The invention relates to a method for detecting an anti-telomerase antibody. The method of the invention comprises reacting telomerase producing protein and a fragment or complex of template RNA with anti-telomerase antibody in a sample, and analysing the product. The transcriptase, and the analysis method is preferably telomerase reverse method can be used to detect for tumours and autoimmune disease. The method can also be used for detecting liver cancer. The current sequence represents the human TERY amino acid sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG 300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Detecting anti-telomerase antibody for detecting tumors and autoimmune
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1 MPRAPRCRAVRSLLRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              MPRAPRCRAVRSLLRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DARPPPAAPSFRQVSCLKELVARVLQRLCERGAKNVLAFGFALLDGARGGPPEAFTTSVR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ATQARPPPHASGPRRIGCERAWNHSVREAGVPLGLPAPGARRRGGSASRSLPLPKRPRR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gapa
                                                                                                                                                       TERT; telomerase; antibody; reverse transcriptase; tumour;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DB 7; Length 1132;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Example Examples; Page 36-41; 45pp; Japanese.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
99.9%; Score 5954; D
Best Local Similarity 99.9%; Pred. No. 0;
Matches 1131; Conservative 0; Mismatches
                                                                                                                        TERT amino acid sequence #SEQ ID
                            Š
                                                                                                                                                                                                                                                                                                                                                                                                                                   꿌
                                                                                                                                                                                                                                                                                                                                                                  MITSUBISHI KAGAKU MEDICAL
                       ADC47061 standard; protein; 1132
                                                                                                                                                                       autoimmune disease; liver cancer
                                                                                                                                                                                                                                                                                                                                                                                                                                     Masutomi
                                                                                                                                                                                                                                                                                                    19-DEC-2002; 2002WO-JP013310.
                                                                                                                                                                                                                                                                                                                                  21-DEC-2001; 2001JP-00390050
                                                                                        (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                  Murakami S, Kaneko
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2003-569289/53.
                                                                                                                                                                                                                                                                                                                                                                                 MURAKAMI S.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                 (MURA/) MURAKAMI
(KANE/) KANEKO S.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence 1132 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               N-PSDB; ADC47060.
                                                                                                                                                                                                                                    WO2003054545-A1
                                                                                                                                                                                                       sapiens
                                                                                        18-DEC-2003
                                                                                                                                                                                                                                                                    03-JUL-2003
                                                         ADC47061;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                disease.
                                                                                                                                                                                                                                                                                                                                                                  (MITS-)
                                                                                                                                                        Human;
                                                                                                                                                                                                       Ношо
```

셤

à

셤

ò

g

ò

셤

ò

ò

```
NRGFKAGRNMRRKLFGVLRLKCHSLFLDLQVNSLQTVCTNIYKILLLQAYRFHACVLQLP 1020
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               FHOOVWKNPTFFLRVISDTASLCYSILKAKNAGMSLGAKGAAGPLPSEAVOWLCHQAFLL 1080
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1080
                                                                                                                540
                                                                                                                                                  9
                                                                                                                                                                                 9
                                                                                                                                                                                                                 99
                                                                                                                                                                                                                                              660
                                                                                                                                                                                                                                                                                                                                             780
                                                                                                                                                                                                                                                                                                                                                                              780
                                                                                                                                                                                                                                                                                                                                                                                                                840
                                                                                                                                                                                                                                                                                                                                                                                                                                                840
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               960
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Human, telomerase reverse transcriptase, hTRT; TRT; diagnosis; prognosis; cell proliferation; cancer; ageing; ribonucleoprotein.
                                                                                                                                                                                                                                                                                720
                                                                                                                                                                                                                                                                                                               720
                                       PAAGVCAREKPQGSVAAPEBEBTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS
                                                                                                                                                  LAKFLHWLMSVYVVELLRSFFYVTETTFQKNRLFFYRKSVWSKLQSIGIRQHLKRVQLRE
                                                                                                                                                                PQDRLTEVIASIIKPQNTYCVRRYAVVQKAAHGHVRKAFKSHVSTLTDLQPYMRQFVAHL
                                                                                                                                                                                                                                                                                                                                                                                                                                 LCSLCYGDMENKLFAGIRRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGCVVNL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 LCSLCYGDMENKLFAGIRRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGCVVNL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               RKTVVNFPVEDEALGGTAFVQMPAHGLFPWCGLLLDTRTLEVQSDYSSYARTSIRASLTF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LFSVLNYERARRPGLIGASVLGLDDIHRAWRTFVLRVRAQDPPPELYFVKVDVTGAYDTI
                                                                                                                                                                                                                                                                                                                                                                                                                QETSPLRDAVVIEQSSSLNEASSGLFDVFLRFMCHHAVRIRGKSYVQCQGIPQGSILSTL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NRGFKAGRNMRRKLFGVLRLKCHSLFLDLQVNSLQTVCTNIYKILLLQAYRFHACVLQLP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              FHQQVWKNPTFFLRVISDTASLCYSILKAKNAGMSLGAKGAAGPLPSEAVQWLCHQAFLL
                                                                                                                                                                                                                   L/SEAEVRQHREARPALLTSRLRF1PKPDGLRP1VNMDYVVGARTFRREKRAERLTSRVKA
                                                                                                                                                                                                                                                                                                                                               PQDRLTEVIASIIKPQNTYCVRRYAVVQKAAHGHVRKAFKSHVSTLTDLQPYMRQFVAHL
                                                                                 RHNERRFLRNTKKFISLGKHAKLSLQELTWKMSVRDCAWLRRSPGVGCVPAAEHRLREEI
                                                                                                                RHNERRFLRNTKKFISLGKHAKLSLQELTWKMSVRGCAWLRRSPGVGCVPAAEHRLREEI
                                                                                                                                                                                                                                                                                LFSVLNYERARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDPPPELYFVKVDVTGAYDTI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Human telomerase reverse transcriptase protein refined sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                KLTRHRVTYVPLLGSLRTAQTQLSRKLPGTTLTALEAAANPALPSDFKTILD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ź
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              standard; protein; 1132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               97GB-00020890
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             96US-00724643
97US-00844419
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             01-OCT-1996;
18-APR-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             13-AUG-1998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             01-OCT-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GB2317891-A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             08-APR-1998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1021
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1081
                                                                                                                481
                                                                                                                                                                                 541
                                                                                                                                                                                                                                              601
                                                                                                                                                                                                                                                                                                                                             721
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               841
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 841
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              961
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               961
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1021
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1081
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AAW56113;
                  121
                                               421
                                                                                481
                                                                                                                                                  541
                                                                                                                                                                                                               601
                                                                                                                                                                                                                                                                                661
                                                                                                                                                                                                                                                                                                               661
                                                                                                                                                                                                                                                                                                                                                                              721
                                                                                                                                                                                                                                                                                                                                                                                                                781
                                                                                                                                                                                                                                                                                                                                                                                                                                              781
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               901
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              901
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AAW56113
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                RESULT 32
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AAWS6113
                                                                                                      g
                                                                                                                                                                           요
                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                     a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ਨੇ
                                       셤
                                                                                8
                                                                                                                                        ò
                                                                                                                                                                                                              8
                                                                                                                                                                                                                                                                                                                                      8
                                                                                                                                                                                                                                                                                                                                                                                                              ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                    원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         8
                                                                                                                                                                                                                                                                                                                                                                                                         polynucleotide encoding an exogenous telomerase reverse transcriptase (TERT). The invention also encompasses the method of making immortal porcine cells, and the use of the immortal porcine cells for measuring the amount of virus in a sample, producing a virus, and evaluating the toxicity of a compound. The cells of the invention may be diploid or aneuploid, and may be an epithelial cell obtained from uterine aneuploid, and may be an epithelial cell obtained from uterine transcriptase expressed by the cells of the invention is preferably human telomerase reverse transcriptase (ADE40482). The immortal porcine cells are useful for measuring an anount of a virus in a sample, producing a virus (especially porcine reproductive and respiratory syndrome virus (PRRSV), or for evaluating toxicity of a compound. The present sequence represents human telomerase reverse transcriptase (hTERT), which is
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ö
                                                                                                                                                                                                                                                                                                                ಹ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              9
                                                                                                                                                                                                                                                                           immortal porcine cell comprising a polynucleotide encoding an
genous telomerase reverse transcriptase polypeptide, useful for
suring the amount of virus in a sample or for evaluating toxicity of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRISHPSVG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1 MPRAPRCRAVRSLLRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DARPPAAPSFRQVSCLKELVARVLQRLCERGAKNVLAFGFALLDGARGGPPEAFTTSVR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DARPPPAAPSFRQVSCLKELVARVLQRLCERGAKAVVLAFGFALLDGARGGPPEAFTTSVR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SYLPNTVTDALRGSGAWGLLLRRVGDDVLVHLLARCALFVLVAPSCAYQVCGPPLYQLGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SYLPNTVTDALRGSGAWGLLLRRVGDDVLVHLLARCALFVLVAPSCAYQVCGPPLYQLGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ATQARPPPHASGPRRRLGCERAWNHSVREAGVPLGLPAPGARRGGSASRSLPLPKRPRR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           VETIFIGSRPWMPGTPRRLPRLPQRYWQMRPLFLELLGNHAQCPYGVLLKTHCPLRAAVT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ATQARPPHASGPRRRLGCERAWNHSVREAGVPLGLPAPGARRRGGSASRSLPLPKRPRR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ROHHAGPPSTSRPPRPWDTPCPPVYAETKHFLYSSGDKEQLRPSFLLSSLRPSLTGARRL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ;
0
                                                                                                                                                                                                                                                                                                                                                                                           invention relates to immortal porcine cells comprising a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             99.9%; Score 5954; DB 7; Length 1132; 99.9%; Pred. No. 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               7;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             0; Mismatches
                                                                                                                                                                                                                                                                                                                                                             Claim 4; SEQ ID NO 2; 42pp; English.
                                                                                                                                                                                                SM;
                                                                                                                                                                                                O'grady
                                                                                               11-MAR-2003; 2003WO-US007526
                                                                                                                               11-MAR-2002; 2002US-0363129P
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Local Similarity 99.9
nes 1131; Conservative
                                                                                                                                                                                              Foster DN,
                                                                                                                                                            (MINU ) UNIV MINNESOTA
                                                                                                                                                                                                                             WPI; 2003-779075/73.
N-PSDB; ADE40481.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence 1132 AA;
                              WO2003077853-A2
Homo sapiens,
                                                              25-SEP-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Best Local Sim:
Matches 1131;
                                                                                                                                                                                            Farris JA,
                                                                                                                                                                                                                                                                                              exogenous t
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           361
                                                                                                                                                                                                                                                                                                                            compound
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
```

8 6 8 6 8 6 8 6 8 6 8 6

```
1020
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1080
                                                                                                                                                                                                 900
                                                                                            480
                                                                                                                                                                                                                                 600
                                                                                                                                                                                                                                                                   099
                                                                                                                                                                                                                                                                                                   99
                                                                                                                                                                                                                                                                                                                                       720
                                                                                                                                                                                                                                                                                                                                                                                                       780
                                                                                                                                                                                                                                                                                                                                                                                                                                         780
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           840
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            840
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                960
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                960
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Telomerase; human; cancer; diagnosis; melanoma; skin cancer; leukaemia; neuroblastoma; breast carcinoma; colon carcinoma; lymphoma; osteosarcoma; smooth muscle cell hyperplasia; stem cell proliferation; Wilm's tumour; stem cell differentiation; organ regeneration; organ differentiation.
                                                                                                                                                                                              LAKFLHWLMSVYVVELLRSFPYVTETTFQKNRLFPYRKSVWSKLQSIGIRQHLKRVQLRE
                                                                                                                                                                                                                   LSEAEVROHREARPALLISRLRFIPKPDGLRPIVNMDYVVGARTFRREKRAERLISRVKA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           LCSLCYGDMENKLFAGIRRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGCVVNL
       PAAGVCAREKPQGGSVAAPEEEDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS
                                                                                                                                                                                                                                                                                                                                                                                                                           LSEAEVROHREARPALLTSRLRFIPKPDGLRPIVNMDYVVGARTFRREKRAERLTSRVKA
                                                                                                                                                                                                                                                                                                                                                       RKTVVNFPVEDEALGGTAFVQMPAHGLFPWCGLLLDTRTLEVQSDYSSYARTSIRASVTF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  FHQQVWKNPTFFLRVISDTASLCYSILKAKNAGMSLGAKGAAGPLPSEAVQMLCHQAFLL
                                                                                                                              RHNERRFLRNTKKFISLGKHAKLSLQELTWKMSVRDCAWLRRSPGVGCVPAAEHRLREEI
                                                                                                                                                                                                                                                                                                                                                                                                       PODRLTEVIASIIKPONTYCVRRYAVVOKAAHGHVRKAFKSHVSTLTDLOPYMRQFVAHL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         QETSPLRDAVVIEQSSSLNEASSGLFDVFLRFMCHHAVRIRGKSYVQCQGIPQGSILSTL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RKTVVNFPVEDEALGGTAFVQMPAHGLFPWCGLLLDTRTLEVQSDYSSYARTSIRASLTF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                NRGFKAGRNMRRKLFGVLRLKCHSLFLDLQVNSLQTVCTNIYKILLLQAYRFHACVLQLP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  FHQQVWKNPTFFLRVISDTASLCYSILKAKNAGMSLGAKGAAGPLPSEAVQWLCHQAFLL
                                                                                                                                                                                                                                                                                                                                     LPSVLNYERARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDPPPELYFVKVDVTGAYDTI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       KITRHRVIYVPLLGSLRTAQTQLSRKLPGTTLTALEAAANPALPSDFKTILD 1132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    KLTRHRVTYVPLLGSLRTAQTQLSRKLPGTTLTALEAANPALPSDFKTILD 1132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Telomerase (ver. 2) protein seguence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Ź
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AAY00647 standard; protein, 1166
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           26-JUL-1999 (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  WO9901560-A1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Homo sapiens.
Synthetic.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    14-JAN-1999
                                                          421
                                                                                          421
                                                                                                                                                            481
                                                                                                                                                                                                                                 541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1021
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AAY00647;
                        361
                                                                                                                            481
                                                                                                                                                                                                541
                                                                                                                                                                                                                                                                                                  601
                                                                                                                                                                                                                                                                                                                                                                     661
                                                                                                                                                                                                                                                                                                                                                                                                     721
                                                                                                                                                                                                                                                                                                                                                                                                                                       721
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           841
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            841
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              901
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  196
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1021
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1081
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1081
                                                                                                                                                                                                                                                                601
                                                                                                                                                                                                                                                                                                                                     661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         781
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         781
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             901
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                961
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      à
                                                                                        ద
                                                                                                                                                       g
                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                            g
                                                                                                                            à
                                                                                                                                                                                                à
                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ద
                                                                                                                                                                                                                                                                                                                                                                           The present sequence represents human telomerase reverse transcriptase (hTRT), which is a ribonucleoprotein. The present invention also describes the following methods: (A) determining whether a test compound is a modulator of hTRT, by detecting the change in hTRT recombinant protein or polynucleotide, on administration of the compound; (B) proparation of recombinant telomerase by contacting a protein preparation of frequencial phy binding a relevant probe to the sample and of hTRT with a telomerase RNA component; (C) detection of the hTRT RNA or protein in a sample by binding a relevant probe to the sample and detecting the complex formed or in the case of RNA detection, amplifying the product and correlating the presence of complex or amplification product with presence of hTRT in the sample; and (D) increasing the product an agent that causes an increasing hTRT expression; and (E) proliferation of a vertebrate cell by increasing hTRT expression; and (E) proliferation of the polynucleotide encoding hTRT can be used in the manufacture of medicaments for inhibiting the effect of ageing or the manufacture of medicaments for inhibiting the effect of ageing or cancer. Inhibitors of telomerase activity and be used to treat conditions that are associated with high telomerase activity. A protein preparation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DARPPPAAPSFRQVSCLKELVARVLQRLCERGAKNVLAFGFALLDGARGGPPEAFTTSVR 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DARPPPAAPSFRQVSCLKELVARVLQRLCERGAROVLAFGFALLDGARGGPPEAFTTSVR 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               VETIFLGSRPWMPGTPRRLPRLPQRYWQMRPLFLELLGNHAQCPYGVLLKTHCPLRAAVT 420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    9
                                                                                                                                                                                                                                                                                                  cell
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           MPRAPRCRAVRSLLRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             MPRAPRCRAVRSLLRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SYLPNTVTDALRGSGAWGLLIRRVGDDVLVHLLARCALFVLVAPSCAYQVCGPPLYQLGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ë
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ATQARPPHASGPRRRLGCERAWNHSVREAGVPLGLPAPGARRRGGSASRSLPLPKRPRR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ROHHAGPPSTSRPPRPWDTPCPPVYAETKHFLYSSGDKEQLRPSFLLSSLRPSLTGARRL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaps
                                                                                                                                                                                                                                                                          Pure and recombinant human Telomerase Reverse Transcriptase and its variants - are useful in the diagnosis, prognosis and treatment of proliferation conditions especially cancer and ageing.
                                                                                                                                                                            Harley
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DB 2; Length 1132;
                                                                                                                                                                            Morin GB,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1;
                                                                                                                                                                          Chapman KB,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              99.8%; Score 5952; 99.8%; Pred. No. 0;
                                                                                                                                                                          Nakamura T,
                                                                                                                                                                                                                                                                                                                                                Example 1; Fig 74; 387pp; English
97US-00846017.
97US-00851843.
97US-0081312.
97US-00911312.
97US-00912951.
                                                                                                                                         UNIV TECHNOLOGY CORP.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Conservative
                                                                                                                                                                         Lingner J,
                                                                                                                                                                                                                            1998-171633/16.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
Best Local Similarity
Matches 1130; Conserv
                                                                                                                         CORP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence 1132 AA;
                                                                                                                                                                                                                                            N-PSDB; AAV22428
                                                                                                                         GERON
                 06-MAY-1997;
09-MAY-1997;
14-AUG-1997;
14-AUG-1997;
                                                                                     14-AUG-1997;
                                                                                                                                                                                            MH;
                                                                                                                       (GERO-) (UYTE-) (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    19
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             301
                                                                                                                                                                         T,
                                                                                                                                                                                            Andrews
                                                                                                                                                                         Cech
```

유 ò 요 ò a

셤 ò

à 셤

셤 ò

```
1106
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1020
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1081 LKAKNAGMSLGAKGAAGPLPSEAVQWLCHQAFLLKLTRHRVTYVPLLGSLRTAQTQLSRK 1140
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                966
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      926
                                                                                                                                                        999
                                                                                                                                                                                                            900
                                                                                                                                                                                                                                                              626
                                                                                                                                                                                                                                                                                                                   099
                                                                                                                                                                                                                                                                                                                                                                    989
                                                                                                                                                                                                                                                                                                                                                                                                                         720
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             746
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  780
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      806
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Human; telomerase reverse transcriptase; hTRT; TRT; diagnosis; prognosis; cell proliferation; cancer; ageing; ribonucleoprotein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DVFLRFMCHHAVRIRGKSYVQCQGIPQGSILSTLLCSLCYGDMENKLFAGIRRDGLLLRL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1021 LDLQVNSLQTVCTNIYKILLLQAYRFHACVLQLPFHQQVWRNPTFFLRVISDTASLCYSI
421 WOMRPLFLELLGNHAQCPYGVLLKTHCPLRAAVTPAAGVCAREKPQGSVAAPEEEDTDPR
                                                                             RLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGSRHNERRFLRNTKKFISLGKHAKLSLQ
                                                                                                                                                                                      781 VQKAAHGHVRKAFKSHVSTLTDLQPYMRQFVAHLQETSPLRDAVVIEQSSSLNEASSGLF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DVFLRFMCHHAVRIRGKSYVQCQGIPQGSILSTLLCSLCYGDMENKLFAGIRRDGLLLRL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      VDDFLLVTPHLTHAKTFLRTLVRGVPEYGCVVNLRKTVVNFPVEDEALGGTAFVQMPAHG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        901 VDDFLLVTPHLTHAKTFLRTLVRGVPEYGCVVNLRKTVVNFPVEDEALGGTAFVQMPAHG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              LKAKNAGMSLGAKGAAGPLPSEAVQWLCHQAFLLKLTRHRVTYVPLLGSLRTAQTQLSRK
                                                 RLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGSRHNERRFLRNTKKFISLGKHAKLSLQ
                                                                                                                                                                                                                                                                 TFOKNRLFFYRKSVWSKLQSIGIRQHLKRVQLRELSEAEVRQHREARPALLTSRLRFIPK
                                                                                                                                                                                                                                                                                                                                                                       PDGLRPIVNMDYVVGARTFRREKRAERLTSRVKALFSVLNYERARRPGLLGASVLGLDDI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                HRAWRTFVLRVRAQDPPPELYFVKVDVTGAYDTIPQDRLTEVIASIIKPQNTYCVRRYAV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               HRAWRIFVIRVRAQDPPPELYFVKVDVTGAYDTIPQDRLTEVIASIIKPQNTYCVRRYAV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         VOKAAHGHVRKAFKSHVSTLTDLQPYMRQFVAHLQETSPLRDAVVIEQSSSLNEASSGLF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LPPWCGLLLDTRTLEVQSDYSSYARTSIRASLTFNRGFKAGRNMRRKLFGVLRLKCHSLF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     LDLQVNSLQTVCTNIYKILLLQAYRFHACVLQLPFHQQVWKNPTFFLRVISDTASLCYSI
                                                                                                                                                        ELTWKMSVRDCAWLRRSPGVGCVPAAEHRLREEILAKFLHWLMSVYVVELLRSFYVTET
                                                                                                                                                                                                                                                                                                                                                                                                   1. .250 / _______/note | //note | //not
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Enhanced green fluorescent protein and hTRT fusion protein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   276. .1405
/note= "hTRT protein fragment"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   LPGTTLTALEAAANPALPSDFKTILD 1132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AAW56101 standard; protein; 1405
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  13-AUG-1998 (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Synthetic.
Homo sapiens
                                                                                                      481
                                                                                                                                                                                                                                                                                                                   601
                                                                                                                                                                                                                                                                                                                                                                    627
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         747
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 841
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1047
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1107
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AAW56101;
                                                                                                                                                        507
                                                                                                                                                                                                                                                                 567
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                687
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     721
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  807
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      867
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               927
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     987
                                                    447
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                              셤
                                                                                                                                                     ò
                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                  à
                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 용
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              This sequence is a truncated human telomerase of the invention. Primers that amplify the telomerase coding sequence can be used in a method for diagnosing cancer in a patient. The telomerase can be used in a method for diagnosing and drug screening. Inhibitors of telomerase activity can be used to treat cancers such as melanomas, other skin cancers, neuroblastomas, breast carcinomas, colon carcinomas, leukaemias, lymphomas, osteosarcomas or smooth muscle cell hyperplasias or skin proliferation and differentiation (expansion of haematopiotic stem cells proliferation and differentiation (expansion of haematopiotic stem cells could be administered in the bone marrow transplant context). As well, many tissues have stem cells. Proliferation of these cells may be useful in wound healing, hair growth, treatment of disease such as Wilm's tumour, organ regeneration or differentiation after injury or diseases, nerve cell or brain cell growth following injury
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           446
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |||||||||||||
Darppaapsfrqvglpcvgvrlglraaggnqrhabssagdsgrpprrsclkblvarvlq 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   206
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         266
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               326
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           386
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    RLCERGAKWVLAFGFALLDGARGGPPEAFTTSVRSYLPNTVTDALRGSGAWGLLLRRVGD 146
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              98
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         MPRAPRCRAVRSLLRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SCLKELVARVLQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DVLVHLLARCALFVLVAPSCAYQVCGPPLYQLGAATQARPPHASGPRRLGCERAWNHS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           VREAGVPLGLPAPGARRRGGSASRSLPLPKRPRRGAAPEPERTPVGQGSWAHPGRTRGPS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DRGFCVVSPARPAEEATSLEGALSGTRHSHPSVGRQHHAGPPSTSRPPRPWDTPCPPVYA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ETKHFLYSSGDKEQLRPSFLLSSLRPSLTGARRLVETIFLGSRPWMPGTPRRLPPRLPQRY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       MPRAPRCRAVRSLLRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  VREAGVPLGLPAPGARRGGSASRSLPLPKRPRRGAPEPERTPVGQGSWAHPGKTRGPS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               WQMRPLFLELIGNHAQCPYGVLLKTHCPLRAAVTPAAGVCAREKPQGSVAAPEEEDTDPR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DVLVHLLARCALFVLVAPSCAYQVCGPPLYQLGAATQARPPPHASGPRRRLGCERAWNHS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ETKHFLYSSGDKEQLRPSFLLSSLRPSLTGARRLVET1FLGSRPWMPGTPRRLPRLPQRY
                                                                                                                                                                                                                                                                                                                                                                                                                   New isolated vertebrate telomerase genes - used to develop products i
treating cancers or for organ regeneration, nerve cell or brain cell
growth following injury or bone marrow transplantation.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                34;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           99.4%; Score 5927; DB 2; Length 1166; 97.0%; Pred. No. 0; ive 0; Mismatches 1; Indels 34
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DARPPPAAPSFRQV------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Claim 4; Fig 11z-ac; 134pp; English
                                                                     97US-0051410P.
97US-0053018P.
97US-0053329P.
97US-0054642P.
97US-0058287P.
                                                                                                                                                                                                                                  (CAMB-) CAMBIA BIOSYSTEMS LLC
                        98WO-US013835
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Best Local Similarity 97.0
Matches 1131; Conservative
                                                                                                                                                                                                                                                                                       Bowtell D;
                                                                                                                                                                                                                                                                                                                                           WPI; 1999-106060/09.
                                                                                                                                                                                                                                                                                                                                                                    N-PSDB; AAX18275.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sequence 1166 AA,
                                                                                                                                                     04-AUG-1997;
                                                                                                   21-JUL-1997
                        01-JUL-1998
                                                                          01-JUL-1997
                                                                                                                                                                                                                                                                                       Kilian A,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Н
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       87
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                147
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      207
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               267
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        327
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  387
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
```

අ දු

8

음 상 음

đ

6 8 6

8 8 8

ઠે

```
Ź
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AAW47007 standard; protein; 1199
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                13-AUG-1998
                                                   301
                                                                                                             361
                                                                                                                                       635
                                                                                                                                                                   421
                                                                                                                                                                                                695
                                                                                                                                                                                                                                                      755
                                                                                                                                                                                                                                                                                  541
                                                                                                                                                                                                                                                                                                             815
                                                                                                                                                                                                                                                                                                                                         109
                                                                                                                                                                                                                                                                                                                                                                     875
                                                                                                                                                                                                                           481
                                                                                                                                                                                                                                                                                                                                                                                                   661
                                                                                                                                                                                                                                                                                                                                                                                                                                                         721
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1115
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1175
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1235
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 781
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        841
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                901
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        961
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1021
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1295
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1081
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1355
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AAW47007;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             RESULT 35
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                           요
                                                                                                          ઠ
                                                                                                                                  d
                                                                                                                                                                à
                                                                                                                                                                                           셤
                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                ద
                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ठे
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                               The present sequence represents a fusion protein from an example of the present invention which describes human telomerase reverse transcriptase (MTR). The present invention also describes the following methods: (A) determining whether a test compound is a modulator of hTRT, by detecting the change in hTRT recombinant protein or polynuclectide, on administration of the compound; (B) preparation of recombinant telomerase by contacting a protein preparation of hTRT with a telomerase RNA component; (C) detection of the hTRT RNA or protein in a sample by binding a relevant probe to the sample and detecting the complex formed or in the case of RNA detection, amplifying the product and correlating the presence of complex or amplification product with presence of hTRT in creasing hTRT expressing the proliferation of a vertebrate cell by increase in cell vertebrate cell proliferation to create a medicament complaints againg. A protein preparation of hTRT and the polynucleotide encoding hTRT can be used in the manufacture of polynucleotide encoding hTRT can be used in the manufacture of medicaments for inhibiting the effect of ageing or cancer. Inhibitors of the high telomerase activity can be used to treat conditions that are associated the property of the presence of the property 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ATQARPPHASGPRRIGGERAWNHSVREAGVPLGLPAPGARRRGGSASRSLPLPKRPRR 240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG 300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 9
                                                                                                                                                                                                                                                                                                                                                     cell
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1 MPRAPRCRAVRSLLRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DARPPPAAPSFRQVSCLKELVARVLQRLCERGAKNVLAFGFALLDGARGGPPEAFTTSVR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SYLPNTVTDALRGSGAWGLLLRRVGDDVLVHLLARCALFVLVAPSCAYQVCGPPLYQLGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CB;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
                                                                                                                                                                                                                                                                   Harley
                                                                                                                                                                                                                                                                                                                                 Pure and recombinant human Telomerase Reverse Transcriptase and variants - are useful in the diagnosis, prognosis and treatment proliferation conditions especially cancer and ageing.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Score 5918; DB 2; Length 1405;
Pred. No. 0;
1; Mismatches 1; Indels 2;
                                                                                                                                                                                                                                                                  Morin GB,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1; Indels
                                                                                                                                                                                                                                                               Chapman KB,
                                                                                                                                                                                                                                                                                                                                                                                         Example 15; Page 269-270; 387pp; English
                                                                                                                                                                                                                                                               Nakamura T,
                                                                                                   970S-00844419.
970S-00846017.
970S-00851843.
970S-0091312.
970S-00912951.
                                                                                                                                                                                                                     GERON CORP.
UNIV TECHNOLOGY CORP.
                                                            97GB-00020890
                                                                                       96US-00724643
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match
Best Local Similarity 99.6%;
Matches 1128; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               used in the new methods
                                                                                                                                                                                                                                                             Lingner J,
                                                                                                                                                                                                                                                                                                       WPI; 1998-171633/16.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sequence 1405 AA
                                                                                                                                             09-MAY-1997;
14-AUG-1997;
14-AUG-1997;
14-AUG-1997;
                                                          01-OCT-1997;
                                                                                                   18-APR-1997;
25-APR-1997;
06-MAY-1997;
   GB2317891-A
                              08-APR-1998
                                                                                     01-OCT-1996
                                                                                                                                                                                                                                                                         Andrews WH,
                                                                                                                                                                                                                                                            TR,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       396
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               456
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           241
                                                                                                                                                                                                                   (GERO-)
(UYTE-)
                                                                                                                                                                                                                                                             Cech
셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
```

```
1020
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1354
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      840
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1055 QETSPLRDAVVIEQSSSLNEASSGLFDVFLRFWCHHAVRIRGKSYVQCQGIPQGSILSTL 1114
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            FHQQVWKNPTFFLRVISDTASLCYSILKAKNAGMSLGAKGAAGPLPSEAVQWLCHQAFLL 1080
634
                                                                                                                              420
                                                                                                                                                                 694
                                                                                                                                                                                                  480
                                                                                                                                                                                                                                   754
                                                                                                                                                                                                                                                                      540
                                                                                                                                                                                                                                                                                                       814
                                                                                                                                                                                                                                                                                                                                        900
                                                                                                                                                                                                                                                                                                                                                                         874
                                                                                                                                                                                                                                                                                                                                                                                                             9
                                                                                                                                                                                                                                                                                                                                                                                                                                             934
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 720
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     780
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      LCSLCYGDMENKLFAGIRRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGCVVNL 900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 960
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 994
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Human; telomerase reverse transcriptase; hTRT; TRT; diagnosis; prognosis; cell proliferation; cancer; ageing; ribonucleoprotein.
                                                                         ROHHAGPPSTSRPPRPWDTPCPPVYAETKHFLYSSGDKEQLRPSFLLSSLRPSLTGARRL
                                                                                                                         VETIFLGSRPWMPGTPRRLPRLPQRYWQMRPLFLELLGNHAQCPYGVLLKTHCPLRAAVT
                                                                                                                                                                                           PAAGVCAREKPQGSVAAPEEEDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS
                                                                                                                                                                                                                  RHNERRFLRNTKKFISLGKHAKLSLQELTWKMSVRDCAWLRRSPGVGCVPAAEHRLREEI
                                                                                                                                                                                                                                                                                                                                  LAKFLHWLMSVYVVELLRSFFYVTETTFOKNRLFFYRKSVWSKLOSIGIRQHLKRVQLRE
                                                                                                                                                                                                                                                                                                                                                                                                        LSEAEVRQHREARPALLTSRLRF1PKPDGLRP1VNMDYVVGARTFRREKRAERLTSRVKA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PQDRLTEVIASIIKPONTYCVRRYAVVOKAAHGHVRKAFKSHVSTLTDLOPYMROFVAHL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    935 LFSVLNYERARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDPPPELYFVKVDVTGAYDTI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    QETSPLRDAVVIEQSSSLNEASSGLFDVFLRFMCHHAVRIRGKSYVQCQGIPQGSILSTL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     LFSVLNYERARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDPPPELYFVKVDVTGAYDTI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NRGFKAGRNMRRKLFGVLRLKCHSLFLDLQVNSLQTVCTNIYKILLLQAYRFHACVLQLP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               FHQQVWKNPTFFLRVISDTASLCYSILKAKNAGMSLGAKGAAGPLPSEAVQWLCHQAFLL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RKTVVNFPVEDEALGGTAFVQMPAHGLFPWCGLLLDTRTLEVQSDYSSYARTSIRASLTF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1405
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     KLTRHRVTXVPLLGSLRTAQTQLSRKLPGTTLTALBAANPALPSDFKTILD 1132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Glutathione-S-transferase and hTRT fusion protein 7.
```

us-10-053-758-225.rag

```
PFHOQVWKNPTFFLRVISDTASLCYSILKAKNAGMSLGAKGAAGPLPSEAVQWLCHQAFL 1079
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    719
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      607
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   667
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ELSEAEVRQHREARPALLISKLRFIPKPDGLRPIVNMDYVVGARTFRREKRAERLISKVK 727
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        728 ALFSVLNYERARRPGLLGASVLGLDDIHRAMRTFVLRVRAQDPPPELYFVKVDVTGAYDT 787
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ELSEAEVRQHREARPALLTSRLRFIPKPDGLRPIVNMDYVVGARTFRREKRAERLTSRVK 659
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                907
                                                                                                                                                                                                                    GROHHAGPPSTSRPPRPWDTPCPPVYAETKHFLYSSGDKEQLRPSFLLSSLRPSLTGARR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             RSYLPNTVTDALRGSGAWGLLLRRVGDDVLVHLLARCALFVLVAPSCAYQVCGPPLYQLG
                                                      RGAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSV
                                                                                                                                                                                                                                                                                              LVETIFLGSRPWMPGTPRRLPRLPQRYWQMRPLFLELLGNHAQCPYGVLLKTHCPLRAAV
                                                                                                                                                                                                                                                                                                                                                                           SRHNERRFLRNTKKFISLGKHAKLSLQELTWKMSVRDCAWLRRSPGVGCVPAAEHRLREE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 LOETSPLRDAVVIEQSSLNEASSGLFDVFLRFWCHHAVRIRGKSYVQCQGIPQGSILST
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            LRKTVVNFPVEDEALGGTAFVQMPAHGLFPWCGLLLDTRTLEVQSDYSSYARTSIRASLT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      FNRGFKAGRNMRRKLFGVLRLKCHSLFLDLQVNSLQTVCTNIYKILLLQAYRFHACVLQL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PFHQQVWKNPTFFLRVISDTASLCYSILKAKNAGMSLGAKGAAGPLPSEAVQWLCHQAFL
                                                                                                                                                                                                                                                                          LVETIFLGSRPWMPGTPRRLPRLPQRYWQMRPLFLELLGNHAQCPYGVLLKTHCPLRAAV
                                                                                                                                                                                                                                                                                                                                                       TPAAGVCAREKPQGSVAAPEEEDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWG
                                                                                                                                                                                                                                                                                                                                                                                                                                  SRHNERRFLRNTKKFISLGKHAKLSLQELTWKMSVRDCAWLRRSPGVGCVPAAEHRLREE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ILAKFLHWLMSVYVVELLRSFFYVTETTFQKNRLFFYRKSVWSKLQSIGIRQHLKRVQLR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   IPQDRLTEVIASIIKPQNTYCVRRYAVVQKAAHGHVRKAFKSHVSTLTDLQPYMRQFVAH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         LLCSLCYGDMENKLFAGIRRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGCVVN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FNRGFKAGRNMRRKLFGVLRLKCHSLFLDLQVNSLQTVCTNIYKILLLQAYRFHACVLQL
                                                                                                                   RGAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSV
                                                                                                                                                                                             GRQHHAGPPSTSRPPRPWDTPCPPVYAETKHFLYSSGDKEQLRPSFLLSSLRPSLTGARR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ALFSVLNYERARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDPPPELYFVKVDVTGAYDT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            LQETSPLRDAVVIEQSSSLNEASSGLFDVFLRFMCHHAVRIRGKSYVQCQGIPQGSILST
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     LRKTVVNPPVEDEALGGTAFVQMPAHGLFPWCGLLLDTRTLEVQSDYSSYARTSIRASLT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ā
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AAY00641 standard; protein; 1120
                                                                                                                                                       309
                                                                                                                                                                                                                                    369
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        548
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              668
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 720
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  848
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1028
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1020
                                                                            249
                                                                                                                                                                                                                                                                                                                                                                                                                                  480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          896
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                960
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1088
                                        180
                                                                                                                   240
                                                                                                                                                                                             300
                                                                                                                                                                                                                                                                          360
                                                                                                                                                                                                                                                                                                                 429
                                                                                                                                                                                                                                                                                                                                                     420
                                                                                                                                                                                                                                                                                                                                                                                           489
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         009
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    099
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            780
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         840
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               806
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1080
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1148
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AAY00641;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       RESULT 36
                                                                          g
                                                                                                                                                   a
                                                                                                                                                                                                                                  8
                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                      8
                                                                                                                 ò
                                                                                                                                                                                             ઠે
                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                   원
                                                                                                                                                                                                                                                                                                                                                                                                                              à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                The present sequence represents a fusion protein from an example of the present invention which describes human telomerase reverse transcriptase (HTRT). The present invention also describes the following methods: (A) determining whether a test compound is a medulator of hTRT, by detecting the change in hTRT recombinant protein or polynucleotide, on administration of the compound; (B) preparation of recombinant telomerase component; (C) detection of the hTRT RNA or protein in a sample by binding a relevant probe to the sample and detecting the complex formed cor in the case of RNA detection, amplifying the product and correlating the presence of complex or amplification product with presence of hTRT in the sample; and (D) increasing the proliferation of a vertebrate cell by increasing hTRT expression; and (E) the use of an agent that causes an increase in cell vertebrate cell proliferation to create a medicament that inhibits ageing. A protein preparation of hTRT and the menticament complication cancer. Inhibitors of the medicaments for inhibiting the effect of ageing or cancer. Inhibitors of the longrase activity can be used to treat conditions that are associated conditions in the mind are associated conditions.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              128
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          cell
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DARPPPAAPSFRQVSCLKLELVARVLQRLCERGAKNVLAFGFALLDGARGGPPEAFTTSV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RSYLPNIVIDALRGSGAWGLLIRRVGDDVLVHLLARCALFVLVAPSCAYQVCGPPLYQLG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1 MPRAPRCRAVRSLLRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DARPPPAAPSFRQVSCLK-ELVARVLQRLCERGAKNVLAFGFALLDGARGGPPEAFTTSV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          G
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Pure and recombinant human Telomerase Reverse Transcriptase and its variants - are useful in the diagnosis, prognosis and treatment of proliferation conditions especially cancer and ageing.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Harley
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length 1199;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   3,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Morin GB,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1; Indels
                                                                          32. .33
/note= "enterokinase cleavage site"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Chapman KB,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Score 5911.5;
Pred. No. 0;
0; Mismatches
                                                        Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Example 6; Page 233; 387pp; English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Nakamura T,
                                                                                                                                                                                                                                                                    97US-00844419.
97US-00846017.
97US-00851843.
97US-0091312.
97US-00912951.
                                                                                                                                                                                                                                                                                                                                                                                                                                                  CORP.
                                                                                                                                                                                                                97GB-00020890
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             99.2%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
Best Local Similarity 99.6
Matches 1129; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                UNIV TECHNOLOGY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  used in the new methods
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Lingner J,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   WPI; 1998-171633/16.
                                                                                                                                                                                                                                                                                                                                                                                                                                  CORP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Sequence 1199 AA;
                                                                          Misc-difference
                                                                                                                                                                                                                                                                                                                                                                                                                                  GERON
                                                                                                                                                                                                                                                                    18-APR-1997;
25-APR-1997;
06-MAY-1997;
09-MAY-1997;
14-AUG-1997;
14-AUG-1997;
Synthetic.
Homo sapiens
                                                                                                                                                                                                                01-OCT-1997;
                                                                                                                                   GB2317891-A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ΉH
                                                                                                                                                                         08-APR-1998
                                                                                                                                                                                                                                                      01-OCT-1996
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                69
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Cech TR,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Andrews
                                                                                                                                                                                                                                                                                                                                                                                                                                GERO-)
                                                                                                                                                                                                                                                                                                                                                                                                                                                    UYTE-)
```

요

ઢ

셤 ò

420 480 480 540 540 900 600 99 99

```
FHQQVWKNPTFFLRVISDTASLCYSILKAKNAGMSLGAKGAAGPLPSEAVQWLCHQAFLL 1068
                                                                                                                                                                    Telomerase; human; cancer; diagnosis; melanoma; skin cancer; leukaemia;
                                                                 GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG
                                        GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG
                                                                                                                                   RQHHAGPPSTSRPPRPWDTPCPPVYAETKHFLYSSGDKEQLRPSFLLSSLRPSLTGARRL
                                                                                                                                                                                                                           VETIFLGSRPWMPGTPRRLPRLPQRYWQMRPLFLELLGNHAQCPYGVLLKTHCPLRAAVT
                                                                                                                                                                                                                                                                         361 VETIFLGSRPWMPGTPRRLPRLPQRYWQMRPLFLELLGNHAQCPYGVLLKTHCPLRAAVT
                                                                                                                                                                                                                                                                                                                           PAAGVCAREKPQGSVAAPEEEDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS
                                                                                                                                                                                                                                                                                                                                                          421 PAAGVCAREKPQGSVAAPEEEDTDPRILVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS
                                                                                                                                                                                                                                                                                                                                                                                                                                                       LSEAEVRQHREARPALLTSRLREIPKPDGLRPIVNMDYVVGARTFRREKRAERLTSRVKA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           LCSLCYGDMENKLFAGIRRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPBYGCVVNL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         LAKFLHWLMSVYVVELLRSFFYVTETTFOKNRLFFYRKSVWSKLQSIGIRQHLKRVQLRE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       LSEAEVRQHREARPALLTSRLRFI PKPDGLRPI VNMDYVVGARTFRREKRAERLTSRVKA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LFSVLNYERARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDPPPELYFVKVDVTGAYDTI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LFSVLNYERARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDPPELYFVK------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PQDRLTEVIASIIKPQNTYCVRRYAVVQKAAHGHVRKAFKSHVSTLTDLQPYMRQFVAHL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                --DRLTEVIASIIKPQNTYCVRRYAVVQKAAHGHVRKAFKSHVSTLTDLQPYMRQFVAHL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NRGFKAGRNMRRKLFGVLRLKCHSLFLDLQVNSLQTVCTNIYKILLLQAYRFHACVLQLP
                                                                                                                                                                                                                                                                                                                                                                                                                            RHNERRFLRNTKKFISLGKHAKLSLQELTWKMSVRDCAWLRRSPGVGCVPAAEHRLREEI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             QETSPLRDAVVIEQSSSLNEASSGLFDVFLRFMCHHAVRIRGKSYVQCQGIPQGSILSTL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RKTVVNFPVEDEALGGTAFVQMPAHGLFPWCGLLLDTRTLEVQSDYSSYARTSIRASLTF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   LCSLCYGDMENKLFAGIRRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGCVVNL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PHOQVWKNPTFFLRVISDTASLCYSILKAKNAGMSLGAKGAAGPLPSEAVQWLCHQAFLL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1081 KLTRHRVTYVPLLGSLRTAQTQLSRKLPGTTLTALEAAANPALPSDFKTILD 1132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Telomerase (ver. 2) protein sequence lacking motif A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AAY00650 standard; protein; 1120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     26-JUL-1999
                                                                                   241
                                                                                                                                                                              301
                                                                                                                                                                                                                              361
                                                                                                                                                                                                                                                                                                                           421
                                                                                                                                   301
                                                                                                                                                                                                                                                                                                                                                                                                                         481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               711
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          829
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  721
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               781
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          694
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             841
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          901
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1021
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        961
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1069
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AAY00650;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AAYOOGSO
ID AAYO
XX
AC AAYO
XX
DT 26-J
XX
XX
XX
XX
XX Telc
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RESULT
                                                                    g
                                                                                                                              ò
                                                                                                                                                                           g
                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                    ద
                                                                                                                                                                                                                                                                                                                           ઠ
                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                 õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      This sequence is a truncated human telomerase of the invention. Primers that amplify the telomerase coding sequence can be used in a method for diagnosing cancer in a patient. The telomerase can be used for detection, diagnosis and drug screening. Inhibitors of telomerase activity can be used to treat cancers such as melanomas, other skin cancers.

"The construction of the cancers of the carcinomas, clon carcinomas, leukaemias, compared set cancers of telomerase may be used to stimulate stem cells growths. Enhancers of telomerase may be used to stimulate stem cells.

"The proliferation and differentiation (expansion of haematopoidetic stem cells proliferation and differentiation (expansion of haematopoidetic stem cells. The could be administered in the bone marrow transplant context). As well, many tissues have stem cells. Proliferation of these cells may be useful in wound healing, hair growth, treatment of disease such as Wilm's cumour, organ regeneration or differentiation after injury or diseases, concerns the context of 
                                                                                        Telomerase; human; cancer; diagnosis; melanoma; skin cancer; leukaemia; neuroblastoma; breast carcinoma; colon carcinoma; lymphoma; osteosarcoma; smooth muscle cell hyperplasia; stem cell proliferation; Wilm's tumour; stem cell differentiation; organ regeneration; organ differentiation.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ij
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      61 DARPFPAAPSFRQVSCLKELVARVLQRLCERGAKOVLAFGFALLDGARGGPPEAFTTSVR 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ATQARPPPHASGPRRRLGCERAWNHSVREAGVPLGLPAPGARRRGGSASRSLPLPKRPRR 240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DARPPPAAPSFRQVSCLKELVARVLQRLCERGAKNVLAFGFALLDGARGGPPEAFTTSVR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 MPRAPRCRAVRSLLRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SYLPNTVTDALRGSGAWGLLLRRVGDDVLVHLLARCALFVLVAPSCAYQVCGPPLYQLGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SYLPNIVIDALRGSGAWGLLLRRVGDDVLVHLLARCALFVLVAPSCAYQVCGPPLYQLGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          New isolated vertebrate telomerase genes – used to develop products f
treating cancers or for organ regeneration, nerve cell or brain cell
growth following injury or bone marrow transplantation.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  12;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length 1120;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               98.7%; Score 5882; DB 2; 98.9%; Pred. No. 0;
                                                  protein sequence lacking motif A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       isolated vertebrate telomerase genes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Claim 4; Fig 11n-o; 134pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                   97US-0051410P.
97US-0053018P.
97US-0053329P.
97US-0054642P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (CAMB-) CAMBIA BIOSYSTEMS LLC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   97US-0058287P.
                                                                                                                                                                                                                                                                                                                                                                                           98WO-US013835
  (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Bowtell D;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              WPI; 1999-106060/09.
N-PSDB; AAX18269.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Best Local Similarity
Matches 1120; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sequence 1120 AA;
26-JUL-1999
                                                                                                                                                                                                                    sapiens
                                                                                                                                                                                                                                                                                   WO9901560-A1
                                                                                                                                                                                                                                                                                                                                                                                   01-JUL-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                 01-JUL-1997;
21-JUL-1997;
21-JUL-1997;
04-AUG-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   09-SEP-1997;
                                                                                                                                                                                                                                                                                                                                      14-JAN-1999
                                                Telomerase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Kilian A,
                                                                                                                                                                                                                                           Synthetic.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   181
                                                                                                                                                                                                                 Homo
```

720

710 780 768 840 828 1020

948

900

888 960 1080

g δ B ઠે g ò

9 099

600 600 780 768

```
QETSPLRDAVVIEQSSSLNEASSGLFDVFLRFMCHHAVRIRGKSYVQCQGIPQGSILSTL 828
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          LCSLCYGDMENKLFAGIRRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGCVVNL 900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LESVINYERARREGLIGASVLGLDDIHRAWRIFVLRVRAQDEPPELYFVKVDVTGAYDTI 720
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Human, telomerase reverse transcriptase, hTRT; TRT; diagnosis; prognosis; cell proliferation; cancer; ageing; ribonucleoprotein.
                      PAAGYCAREKPOGSVAAPEEEDTDPRILVOLLRQHSSPWQVYGFVRACLRRLVPPGLWGS
                                                                                                                                                                                                                                                                                                                                                               LAKFLHWLMSVYVVELLRSFFYVTETTFQKNRLFFYRKSVWSKLQSIGIRQHLKRVQLRE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             RKTVVNPPVEDEALGGTAFVQMPAHGLFPWCGLLLDTRTLEVQSDYSSYARTSIRASLTF
                                                                                                                                  VET1FLGSRPWMPGTPRRLPRLPRVWQMRPLFLELLGNHAQCPYGVLLKTHCPLRAAVT
                                                                                                                                                                                                                                                                                LSEAEVROHREARPALLTSRLRFIPKPDGLRPIVNMDYVVGARTFRREKRAERLTSRVKA
                                                                                                                                                                                                                                                                                                                                                                                                                                             QETSPLRDAVVI EQSSSLNEASSGLFDVFLRFMCHHAVRIRGKSYVQCQGI PQGSILSTL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         FHQQVWKNPTFFLRVISDTASLCYSILKAKNAGMSLGAKGAAGPLPSEAVQWLCHQAFLL
                                                                                                                                                                               PAAGVCAREKPQGSVAAPEEEDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS
                                                                                                                                                                                                                                                                                                                                          LAKFLHWLMSVYVVVELLRSFFYVTETTFQKNRLFFYRKSVWSKLQSIGIRQHLKRVQLRE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         RKTVVNFPVEDEALGGTAFVQMPAHGLFPWCGLLLDTRTLEVQSDYSSYARTSIRASLTF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NRGFKAGRNMRRKLFGVLRLKCHSLFLDLQVNSLQTVCTNIYKILLLQAYRFHACVLQLP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   FHOOVWKNPTFFLRVISDTASLCYSILKAKNAGMSLGAKGAAGPLPSEAVQWLCHQAFLL
                                                                                                                                                                                                                                                           RHNERRFLRNTKKFISLGKHAKLSLQELTWKMSVRDCAWLRRSPGVGCVPAAEHRLREEI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  KLTRHRVTYVPLLGSLRTAQTQLSRKLPGTTLTALEAAANPALPSDFKTILD 1132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         LFSVLNYERARRPGLLGASVLGLDDIHRAWRTFVLRVRAODPPPELYFVK-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Glutathione-S-transferase and hTRT fusion protein 6.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Ą.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AAW47006 standard; protein; 1150
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       13-AUG-1998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Synthetic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   829
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              889
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1009
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AAW47006;
                                                         301
                                                                                                                                        361
                                                                                                                                                                                                                    421
                                                                                                                                                                                                                                                                                                                                                                               541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     169
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1021
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1081
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1069
                      301
                                                                                                 361
                                                                                                                                                                               421
                                                                                                                                                                                                                                                           481
                                                                                                                                                                                                                                                                                                 481
                                                                                                                                                                                                                                                                                                                                          541
                                                                                                                                                                                                                                                                                                                                                                                                                    601
                                                                                                                                                                                                                                                                                                                                                                                                                                                            601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              781
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            841
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         901
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     961
                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SSXXXXXXXXXXXX
                                                 셤
                                                                                                 ઠે
                                                                                                                                음
                                                                                                                                                                             ò
                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                             δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         유
                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   This sequence is a truncated human telomerase of the invention. Primers that amplify the telomerase coding sequence can be used in a method for diagnosing cancer in a patient. The telomerase can be used for detection, diagnosis and drug screening. Inhibitors of telomerase activity can be used to treat cancers such as melanomas, other skin cancers, neuroblastomas, breast carcinomas, othor carcinomas, leukaemias, leukaemias, leukaemias, leukaemias, leukaemias, leukaemias, osteosarcomas or smooth muscle cell hyperplacias or skin growths. Enhancers of telomerase may be used to stimulate stem cell proliferation and differentiation (expansion of haematopoietic stem cells could be administered in the bone marrow transplant context). As well, many tissues have stem cells. Proliferation of these cells may be useful in wound healing, hair growth, treatment of disease such as Wilm's tumour, organ regeneration or differentiation after injury or disease, nerve cell or brain cell growth following injury. Note: The N-terminus of this sequence can be replaced by the sequences shown in AAY00656-Y00658
neuroblastoma; breast carcinoma; colon carcinoma; lymphoma; osteosarcoma; smooth muscle cell hyperplasia; stem cell proliferation; Wilm's tumour; stem cell differentiation; organ regeneration; organ differentiation.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG 300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           MPRAPRCRAVRSLLRSHTREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DARPPPAAPSFRQVSCLKELVARVLQRLCERGAKNVLAFGFALLDGARGGPPEAFTTSVR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DARPPPAAPSFRQVSCLKELVARVIQRLCERGAKNVIAFGFALLDGARGGPPEAFTTSVR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1 MPRAPRCRAVRSLLRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ATQARPPPHASGPRRRLGCERAWNHSVREAGVPLGLPAPGARRRGGSASRSLPLPKRPRR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     telomerase genes - used to develop products organ regeneration, nerve cell or brain cell or bone marrow transplantation.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length 1120;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DB 2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match 98.5%; Score 5873; D
Best Local Similarity 98.9%; Pred. No. 0;
Matches 1119; Conservative 0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Claim 4; Fig 11ah-aj; 134pp; English
                                                                                                                                                                                                                                                       97US-0051410P.
97US-0053018P.
97US-0053329P.
97US-0054642P.
97US-0058287P.
                                                                                                                                                                                                                                                                                                                                                                             (CAMB-) CAMBIA BIOSYSTEMS LLC
                                                                                                                                                                                                                    98WO-US013835
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     New isolated vertebrate
treating cancers or for
growth following injury
                                                                                                                                                                                                                                                                                                                                                                                                                    Kilian A, Bowtell D;
                                                                                                                                                                                                                                                                                                                                                                                                                                                            WPI; 1999-106060/09.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sequence 1120 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              N-PSDB; AAX18278
                                                                              Homo sapiens
Synthetic.
                                                                                                                                                                                                                                                                            21-JUL-1997;
21-JUL-1997;
04-AUG-1997;
                                                                                                                                      WO9901560-A1
                                                                                                                                                                                                                    01-JUL-1998;
                                                                                                                                                                                                                                                                                                                                        09-SEP-1997;
                                                                                                                                                                             14-JAN-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            181
```

ò 셤 ò a ઠે 셤 à 셤 ò

GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG

```
The present sequence represents a fusion protein from an example of the present invention which describes human telomerase reverse transcriptase (TTRT). The present invention also describes the following methods: (A) determining whether a test compound is a medulator of hTRT, by detecting the change in hTRT recombinant protein or polymucleotide, on administration of the compound; (B) preparation of recombinant telomerase by contecting a protein preparation of hTRT with a telomerase RNA component; (C) detection of the hTRT RNA or protein in a sample by inding a relevant probe to the sample and detecting the complex formed or in the case of RNA detection, amplifying the product and correlating the presence of complex or amplification product with presence of hTRT in creasing hTRT expression; and (B) the use of a vertebrate cell by increasing the proliferation to create a medicament polymucleotide encoding hTRT can be used in the manufacture of the inhibiting the effect of ageing or cancer. Inhibitors of the high telomerase activity can be used to treat conditions that are associated with high telomerase activity. A protein preparation of hTRT can also be used in the new methods
                                                                                                                                                                                                                                                                                                                                                                                                      cell
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1 MPRAPRCRAVRSLLRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                                                                           Harley
                                                                                                                                                                                                                                                                                                                                                                            Pure and recombinant human Telomerase Reverse Transcriptase and variants - are useful in the diagnosis, prognosis and treatment proliferation conditions especially cancer and ageing.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        14;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length 1150;
                                                                                                                                                                                                                                                                                                          Morin GB,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           5,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2;
                                                                                                                                                                                                                                                                                                      Chapman KB,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         96.0%; Score 5721; DB 97.8%; Pred. No. 0; ive 6; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                          Example 6; Page 231-232; 387pp; English.
                                                                                                                                                                                                                                                                                                     Nakamura T,
                                                                                                           96US-00724643.
97US-00844419.
97US-00846017.
97US-00851843.
97US-00854050.
                                                                                97GB-00020890
                                                                                                                                                                                                     97US-00912951
97US-00915503
                                                                                                                                                                                                                                                                       UNIV TECHNOLOGY CORP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Conservative
                                                                                                                                                                                                                                                                                                   Lingner J,
                                                                                                                                                                                                                                                                                                                                                WPI; 1998-171633/16.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
Best Local Similarity
Matches 1112; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Sequence 1150 AA;
                                                                                                                                                                                                                                                       GERO-) GERON
                                                                                                                         18-APR-1997;
25-APR-1997;
06-MAY-1997;
09-MAY-1997;
14-AUG-1997;
                                                                             01-OCT-1997;
                                                                                                                                                                                                                      14-AUG-1997;
                                               08-APR-1998
                                                                                                            01-OCT-1996
                                                                                                                                                                                                                                                                                                                    Andrews WH;
                                                                                                                                                                                                                                                                                                   TR,
                                                                                                                                                                                                                                                                     UYTE-)
g
```

61 61 121

ò g 181

ò

g à

```
479
                                                                                                                                                                                                                                                                                                                                                                                                                                                     SLTFNRGFKAGR-NMRRKLFGVLRLKCHSLFLDLQVNSLQTVCTNIYKILLLQAYRFHAC 1015
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1013 VLQLPFHQQVWKNPTFFLRVISDTASLCYSILKAKNAGMSLGAKGAAGPLPSEAVQWLCH 1072
                                                                    420
                                                                                                        479
                                                                                                                                               539
                                                                                                                                                                                   599
                                                                                                                                                                                                      598
                                                                                                                                                                                                                         658
                                                                                                                                                                                                                                           657
                                                                                                                                                                                                                                                               718
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          VLQLPFHQQVWKNPTFPLRVISDTASLCYSILKAKNAGWSLGAKGAAGPLPSEAVQMLCH 1075
                                                                                                                                                                                                                                                                                 717
                                                                                                                                                                                                                                                                                                    778
                                                                                                                                                                                                                                                                                                           HLQETSPIRDAVVIEQSSSL-NEASSGLFDVFLRFMCHHAVRIRGKSYVQCQGIPQGSIL 837
                                                                                                                                                                                                                                                                                                                                                            835
                                                                                                                                                                                                                                                                                                                                                                               897
                                                                                                                                                                                                                                                                                                                                                                                                                             894
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Telomerase; human; cancer; diagnosis; melanoma; skin cancer; leukaemia; neuroblastoma; breast carcinoma; colon carcinoma; lymphoma; osteosarcoma;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                QAFLLKUTRHRVTYVPLLGSLRTAQTQLSRKLPGTTLTALEAAANPALPSDFKTILD 1132
ROHHAGPPSTSRPPRPWDTPCPPVYAETKHFLYSSGDKEQLRPSFLLSSLRPSLTGARRL
                                                               VETIFLGSRPWMPGTPRRLPRLPQRYWQMRPLFLELLGNHAQCPYGVLLKTHCPLRAAVT
                                                                          PAAGVCAREKPQGSVAAPEEEDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGL-WG
                                                                                                                 SRHNERRFLRNTKKFISLGKHAKLSLQELTWKMSVRDCAWLRRSPGVGCVPAAEHRLREE
                                                                                                                                                     ILAKPLHWIMSVYVVBLLRSFPXVTETTFOKNRLFFYRKSVWSKLOSIGIROHLKRVQLR
                                                                                                                                                                                          ELSBAEVRQHREARPALLTSRLRFIPKPDGLRPIVN-MDYVVGARTFRREKRAERLTSRV
                                                                                                                                                                                                                                                          KALFSVLNYERARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDPPPELYFVKVDVTGAYD
                                                                                                                                                                                                                                                                                               TIPQDRLTEVIASIIKPONTYCVRRYAVVQKAAHGHVRKAFKSHVSTLTDLQPYMRQFVA
                                                                                                                                                                                                                                                                                                                                                                                       STLLCSLCYGDMENKLFAGIRRDGLLFRLVDDFLLVTPHLTHAKTFIRTLVRG-PEYGCV
                                                                                                                                                                                                                                                                                                                                                                                                               VNLRKTVVNPPVEDEALGGTAFVQMPAHGLPPW-CGLLLDTRTLEVQSDYSSYARTSIRA
                                                                                                                                                                                                                                                                                                                                                  STLLCSLCYGDMENKLFAGIRRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGCV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Altered C-terminused telomerase protein sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  standard; protein; 1053
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        26-JUL-1999
                                                                                                                       420
                         301
                                           301
                                                               361
                                                                                 361
                                                                                                    421
                                                                                                                                                                               540
                                                                                                                                                                                                                     900
                                                                                                                                                                                                                                                                             658
                                                                                                                                                                                                                                                                                                                   718
                                                                                                                                                                                                                                                                                                                                                        178
                                                                                                                                                                                                                                       599
                                                                                                                                                                                                                                                           629
                                                                                                                                                                                                                                                                                               719
                                                                                                                                                                                                                                                                                                                                     411
                                                                                                                                                                                                                                                                                                                                                                            838
                                                                                                                                                                                                                                                                                                                                                                                             936
                                                                                                                                                                                                                                                                                                                                                                                                                868
                                                                                                                                                                                                                                                                                                                                                                                                                                  895
                                                                                                                                                                                                                                                                                                                                                                                                                                                      957
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         953
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1016
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1076
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AAY00640
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                      g
                                                              ò
                                                                              g
                                                                                                   δ
                                                                                                                    g
                                                                                                                                         8
                                                                                                                                                         Q
                                                                                                                                                                               ò
                                                                                                                                                                                               셤
                                                                                                                                                                                                                  ð
                                                                                                                                                                                                                                   요
                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                        엄
                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                              엄
                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                        ð
                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                   8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ठ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ξ,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ATQARPPHASGPRRRLGCERAWNHSVREAGVPLGLPAPGARRRGGSASRSLPLPKRPRR 240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DARPPPAAPSFRQVSCLKELVARVLQRLCERGAKNVLAFGFALLDGARGGPPEAFTTSVR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SYLPNTYTDALRGSGAWGLLLRRVGDDVLVHLLARCALFVLVAPSCAYQVCGPPLYQLGA
```

```
NRGFKAGRNMRRKLFGVLRLKCHSLFLDLQVNSLQTVCTNIYKILLLQAYRFHACVLQLP 1020
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         840
                                                                                                        420
                                                                                                                                              480
                                                                                                                                                                             480
                                                                                                                                                                                                                                                                                      600
                                                                                                                                                                                                                                                                                                                        900
                                                                                                                                                                                                                                                                                                                                                             999
                                                                                                                                                                                                                                                                                                                                                                                            099
                                                                                                                                                                                                                                                                                                                                                                                                                                 720
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 720
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    780
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     780
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 960
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Telomerase; human; cancer; diagnosis; melanoma; skin cancer; leukaemia; neuroblastoma; breast carcinoma; arcrinoma; osteosarcoma; smooth muscle cell hyperplasia; stem cell proliferation; Wilm's tumour; stem cell differentiation; organ regeneration; organ differentiation.
     RQHHAGPPSTSRPPRPWDTPCPPVYAETKHFLYSSGDKEQLRPSFLLSSLRPSLTGARRL
                         VETI FLGSR PWMPGT PRRLPRLPQR YWQMRPLFLELLGNHAQCPYGVLLKTHCPLRAAVT
                                                                                                                                                                             PAAGVCAREKPOGSVAAPEEEDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS
                                                                                                                                                                                                                                                                                                        ISEAEVRQHREARPALLTSRLRFI PKPDGLRPI VNMDYVVGARTFRREKRAERLTSRVKA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PODRLIEVIASIIKPONTYCVRRYAVVOKAAHGHVRKAFKSHVSTLTDLQPYMRQFVAHL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          LCSLCYGDMENKLFAGIRRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGCVVNL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LCSLCYGDMENXLFAGIRRDGLLLRLVDDFLLVTPHLTHAXTFLRTLVRGVPEYGCVVNL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     RKTVVNFPVEDEALGGTAFVQMPAHGLFPWCGLLLDTRTLEVQSDYSSYARTSIRASLTF
                                                                       VETIFLGSRPWMPGTPRRLPQRYWQMRPLFLELLGNHAQCPYGVLLKTHCPLKAAVT
                                                                                                                                                                                                                                    RHNERRFLRNTKKFISLGKHAKLSLQELTWKMSVRDCAWLRRSPGVGCVPAAEHRLREEI
                                                                                                                                                                                                                                                                                       LAKFLHWLMSVYVVELLRSFFYVTETTFQKNRLFFYRKSVWSKLQSIGIRQHLKRVQLRE
                                                                                                                                                                                                                                                                                                                                                                                                                                                 PODRLTEVIASIIKPONTYCVRRYAVVOKAAHGHVRKAFKSHVSTLTDLOPYMRQFVAHL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      QETSPLRDAVVIEQSSSLNEASSGLFDVFLRFMCHHAVRIRGKSYVQCQGIPQGSILSTL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RKTVVNFPVEDEALGGTAFVQMPAHGLPPWCGLLLDTRTLEVQSDYSSYARTSIRASLTF
                                                                                                                                              PAAGVCAREKPQGSVAAPEEEDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS
                                                                                                                                                                                                                  RHNERRFLRNTKKFISLGKHAKLSLQELTWKMSVRDCAWLRRSPGVGCVPAAEHRLREEI
                                                                                                                                                                                                                                                                                                                                                             LSEAEVRQHREARPALLTSRLRFI PKPDGLRPI VNMDYVVGARTFRREKRAERLTSRVKA
                                                                                                                                                                                                                                                                                                                                                                                                                               LFSVLNYERARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDPPPELYFVKVDVTGAYDTI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Altered C-terminus telomerase (ver. 2) protein sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            FHOOVWKNPTFFLRVISDTASLCYSILKAKNA 1052
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ź
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     standard, protein, 1093
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       WO9901560-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       26-JUL-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Synthetic.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1021
                                      301
                                                                                                          361
                                                                                                                                                                             421
                                                                                                                                                                                                                                                   481
                                                                                                                                                                                                                                                                                                                          541
                                                                                                                                                                                                                                                                                                                                                                                              601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    721
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           781
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            841
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              841
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   901
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  901
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       961
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         196
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1021
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AAY00649;
     301
                                                                         361
                                                                                                                                              421
                                                                                                                                                                                                                481
                                                                                                                                                                                                                                                                                         541
                                                                                                                                                                                                                                                                                                                                                             601
                                                                                                                                                                                                                                                                                                                                                                                                                                 199
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       721
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          781
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AAY00649
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Homo
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 RESULT
                                                                                                ద
                                                                                                                                                                          g
                                                                                                                                                                                                                                          ద
                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         දු පු
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      염
                             셤
                                                                         ò
                                                                                                                                   ð
                                                                                                                                                                                                     ે
                                                                                                                                                                                                                                                                                    8
                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                               ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ሯ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              This sequence is a truncated human telomerase of the invention. Primers that amplify the telomerase coding sequence can be used in a method for diagnosing cancer in a patient. The telomerase can be used for detection, diagnosis and drug screening. Inhibitors of telomerase activity can be neurolatorial and drug screening. Inhibitors of telomerase activity can be comercial and drug screening. Inhibitors of telomerase activity can be neurolatorase became carcinomas, used to treat cancers such as melanomas, other skin cancers, comparatomas, breast carcinomas, leukaemias, lower than a comparation of telomerase may be used to stimulate stem cell comparation and differentiation (expansion of haematopoietic stem cells could be administered in the bone marrow transplant context). As well, many tissues have stem cells. Proliferation of these cells may be useful to wound healing, hair growth, treatment of disease such as Wilm's tumour, organ regeneration or differentiation after injury or diseases, control or brain cell growth following injury. Note: The C-terminus of this sequence can be replaced by the sequence shown in ANYO0654
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DARPPPAAPSFRQVSCLKELVARVLQRLCERGAKNVLAFGFALLDGARGGPPEAFTTSVR 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   9
                                                                                                                                                                                                                                                                                                                                                                                                                                               New isolated vertebrate telomerase genes - used to develop products for treating cancers or for organ regeneration, nerve cell or brain cell growth following injury or bone marrow transplantation.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1 MPRAPRCRAVRSLLRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SYLPNTVTDALRGSGAWGLLLRRVGDDVLVHLLARCALFVLVAPSCAYQVCGPPLYQLGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ATQARPPHASGPRRILGCERAMNHSVREAGVPLGLPAPGARRRGGSASRSLPLPKRPRR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 smooth muscle cell hyperplasia; stem cell proliferation; Wilm's tumou
stem cell differentiation; organ regeneration; organ differentiation.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         93.2%; Score 5555; DB 2; Length 1053; 100.0%; Pred. No. 0; ive 0; Mismatches 0; Indels 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Claim 4; Fig 111-m; 134pp; English
                                                                                                                                                                                                            97US-0051410P.
97US-0053018P.
97US-0053329P.
97US-0054642P.
                                                                                                                                                                                                                                                                                                                        (CAMB-) CAMBIA BIOSYSTEMS LLC.
                                                                                                                                                                             98WO-US013835
                                                                                                                                                                                                                                                                                    97US-0058287P
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Best Local Similarity 100.
Matches 1052; Conservative
                                                                                                                                                                                                                                                                                                                                                           Kilian A, Bowtell D;
                                                                                                                                                                                                                                                                                                                                                                                              1999-106060/09.
                                                                                                                                                                                                                                                                                                                                                                                                              N-PSDB; AAX18268.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence 1053 AA;
                                                     Homo sapiens
Synthetic.
                                                                                                                                                                                                                                21-JUL-1997;
21-JUL-1997;
04-AUG-1997;
                                                                                                          WO9901560-A1
                                                                                                                                                                             01-JUL-1998;
                                                                                                                                                                                                                01-JUL-1997;
                                                                                                                                                                                                                                                                                    09-SEP-1997;
                                                                                                                                            14-JAN-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
```

ઠે 셤 ઠે g ò 셤 ò 셤 ઠે

```
KCHSIFIDIQVNSLQTVCTNIYXIILLQAYRFHACVLQLPFHQQVWKNPTFFLRVISDTA 1080
                                                        480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              960
                                                                                           507
                                                                                                                              540
                                                                                                                                                                 560
                                                                                                                                                                                                  600
                                                                                                                                                                                                                                     620
                                                                                                                                                                                                                                                                      9
                                                                                                                                                                                                                                                                                                         680
                                                                                                                                                                                                                                                                                                                                          720
                                                                                                                                                                                                                                                                                                                                                                             740
                                                                                                                                                                                                                                                                                                                                                                                                             780
                                                                                                                                                                                                                                                                                                                                                                                                                                                   800
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    840
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       860
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        920
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 980
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Telomerase; human; cancer; diagnosis; melanoma; skin cancer; leukaemia; neuxoblastoma; breast carcinoma; colon carcinoma; lymphoma; osteosarcoma; smooth muscle cell hyperplasia; stem cell proliferation; Wilm's tumour; stem cell differentiation; organ regeneration; organ differentiation.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Altered C-terminus telomerase lacking motif A (ver. 2) protein sequence
                                          421 PAAGVCAREKPQGSVAAPEEEDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS
                                                                                                              LAKFLHWLTWKMSVRDCAWLRRSPGVGCVPAAEHRLREEILAKFLHWLMSVYVVELLRSF
                                                                                                                                                                                                                                                          FYVTETTFØKNRLFFYRKSVWSKLØSIGIRQHLKRVQLRELSEAEVRQHREARPALLTSR
                                                                                                                                                                                                                                                                                                                               LRFIPKPDGLRPIVNMDYVVGARTFRREKRAERLISRVKALFSVLNYERARRPGLLGASV
                                                                                                                                                                                                                                                                                                                                                                                                             LGLDDIHRAWRTFVLRVRAQDPPPELYFVKVDVTGAYDTIPQDRLTEVIASIIKPQNTYC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGCVVNLRKTVVNFPVEDEALGGTAFV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     QMPAHGIFPWCGLLLDTRTLEVQSDYSSYARTSIRASLTFNRGFKAGRNWRRKLFGVLRL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   KCHSLFLDLQVNSLQTVCTNIYKILLLQAYRFHACVLQLPFHQQVWKNPTFFLRVISDTA
                                                                                                                                                                                                                                   FYVTETTFOKNRLFFYRKSVWSKLQSIGIRQHLKRVQLRELSEAEVRQHREARPALLTSR
                                                                                                                                                                                                                                                                                                         LRFIPKPDGLRPIVNMDYVVGARTFRREKRAERLTSRVKALFSVLNYERARRPGLLGASV
                                                                                                                                                                                                                                                                                                                                                                             LGLDDIHRAWRTFVLRVRAQDPPPELYFVKVDVTGAYDTIPQDRLTEVIASIIKPQNTYC
                                                                                                                                                                                                                                                                                                                                                                                                                                                 VRRYAVVQKAAHGHVRKAFKSHVSTLTDLQPYMRQFVAHLQETSPLRDAVVIEQSSSLNE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 VRRYAVVQKAAHGHVRKAFKSHVSTLTDLQPYMRQFVAHLQETSPLRDAVVIEQSSSLNE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ASSGLFDVFLRFMCHHAVRIRGKSYVQCQGIPQGSILSTLLCSLCYGDMENKLFAGIRRD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               QMPAHGLFPWCGLLLDTRTLEVQSDYSSYARTSIRASLTFNRGFKAGRNMRRKLFGVLRL
                                                                                                                                                               -----LTWKMSVRDCAWLRRSPGVGCVPAAEHRLREEILAKFLHWLMSVYVVELLRSF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGCVVNLRKTVVNFPVEDEALGGTAFV
                                                                                           RHNERRFLRNTKKFISLGKHAKLSLQE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AAY00652 standard; protein; 1041 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        98WO-US013835.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SLCYSILKAKNA 1052
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       01-JUL-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     26-JUL-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   WO9901560-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     14-JAN-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1021
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1041
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Synthetic
                                                                                                                             481
                                                                                                                                                               508
                                                                                                                                                                                                  541
                                                                                                                                                                                                                                                                                                                                          661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        841
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            901
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1081
                      421
                                                                                          481
                                                                                                                                                                                                                                     561
                                                                                                                                                                                                                                                                     601
                                                                                                                                                                                                                                                                                                       621
                                                                                                                                                                                                                                                                                                                                                                             681
                                                                                                                                                                                                                                                                                                                                                                                                             721
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  781
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     801
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         861
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               921
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     981
                                                                                                                                                                                                                                                                                                                                                                                                                                                741
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  961
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AAY00652;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Homo
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RESULT 41
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                        ò
                                                                                                                     유
                                                                                                                                                   ò
                                                                                                                                                                                           g
                                                                                                                                                                                                                                  δ
                                                                                                                                                                                                                                                               a
                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                              8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               임
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   qq
                                                                                                                                                                                                                                                                                                                                                                                                   This sequence is a truncated human telomerase of the invention. Frimers that amplify the telomerase coding sequence can be used in a method for disponeing cancer in a patient. The telomerase can be used for detection, diagnosis and drug screening. Inhibitors of telomerase activity can be used to treat cancers such as melanomas, other skin cancers, neuroblastomas, brast carcinomas, other skin cancers, neuroblastomas, osteosarcomas or smooth muscle cell hyperplasias or skin growths. Enhancers of telomerase may be used to stimulate stem cell growths. Enhancers of telomerase may be used to stimulate stem cells could be administered in the bone marrow transplant context). As well, many tissues have stem cells. Proliferation of these cells may be useful in mound healing, hair growth, treatment of disease such as Wilm's the would healing, hair growth, treatment of disease such as Wilm's cumour, organ regeneration or differentiation after injury or disease, nerve cell or brain cell growth following injury. Note: The N-terminus of this sequence can be replaced by the sequences shown in AAV00656.700559, this sequence can be replaced by the sequences.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DARPPPAAPSFROVSCLKELVARVLORLCERGAKNVLAFGFALLDGARGGPPEAFTTSVR 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         9
                                                                                                                                                                                                                                                                                                       for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SYLPNTVIDALRGSGAWGLLLRRVGDDVLVHLLARCALFVLVAPSCAYQVCGPPLYQLGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ATQARPPPHASGPRRRIGCERAWNHSVREAGVPLGLPAPGARRGGSASRSLPLPKRPRR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          VETIFICSRPWMPGTPRRLPRLPQRYWQWRPLFLELLGNHAQCPYGVLLXTHCPLRAAVT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MPRAPRCRAVRSLLRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ATQARPPHASGPRRRLGCERAWNHSVREAGVPLGLPAPGARRRGGSASRSLPLPKRPRR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ROHHAGPPSTSRPPRPWDTPCPPVYAETKHFLYSSGDKEQLRPSFLLSSLRPSLTGARRL
                                                                                                                                                                                                                                                                                                    New isolated vertebrate telomerase genes – used to develop products f
treating cancers or for organ regeneration, nerve cell or brain cell
growth following injury or bone marrow transplantation.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              the C-terminus can be replaced by the sequence shown in AAY00654
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     40;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2; Length 1093;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ï
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match 92.5%; Score 5516; DB Best Local Similarity 96.2%; Pred. No. 0; Matches 1051; Conservative 0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                        Claim 4; Fig 11af-ag; 134pp; English
                                                                  97US-0051410P.
97US-0053018P.
97US-0053329P.
97US-0054642P.
97US-0058287P.
                                                                                                                                                                          BIOSYSTEMS LLC
                                  98WO-US013835
                                                                                                                                                                                                             Bowtell D;
                                                                                                                                                                                                                                                WPI; 1999-106060/09.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sequence 1093 AA;
                                                                                                                                                                                                                                                               N-PSDB; AAX18277
                                                                                                                                                                            CAMBIA
                                                                                                                     04-AUG-1997;
                                  01-JUL-1998;
                                                                                    21-JUL-1997;
14-JAN-1999
                                                                                                                                                                                                            Kilian A,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      н
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            301
                                                                                                                                                                          (CAMB-)
```

g

셤

ò

유

ద

ò

셤 ð

ò

ò

셤 ò

ઠ

```
NRGFKAGRNMRRKLFGVLRLKCHSLFLDLQVNSLQTVCTNIYKILLLQAYRFHACVLQLP 1020
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       9
                                                                                                                                                             9
                                                                                                                                                                                          9
                                                                                                                                                                                                                                                                                                                                                          840
                                                                                                                                                                                                                                                                                                                                                                          LFSVLNYERARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDPPPELYFVKVDVTGAYDTI 720
                                                                                                                                                                                                                                                                                                                        768
                                                                                                                                                                                                                                                                                                                                                                                                                        LCSLCYGDMENKLFAGIRRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVFEYGCVVNL 900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Telomerase; human; cancer; diagnosis; melanoma; skin cancer; leukaemia; eurucblastoma; breast carcinoma; rosteosarcoma; smooth muscle cell hyperplasia; stem cell proliferation; wilm's tumour; stem cell differentiation; organ regeneration; organ differentiation.
                              LAKFLHWLMSVYVVELLRSFFYVTETTFQKNRLFFYRKSVWSKLQSIGIRQHLKRVQLRE
                                                                                                                                                                             --DRLTEVIASIIKPQNTYCVRRYAVVQKAAHGHVRKAFKSHVSTLTDLQPYMRQFVAHL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        RKTVVNFPVEDEALGGTAFVQMPAHGLFPWCGLLLDTRTLEVQSDYSSYARTSIRASLTF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RKTVVNFPVEDEALGGTAFVQMPAHGLFPWCGLLLDTRTLEVQSDYSSYARTSIRASLIF
421 PAAGVCAREKPQGSVAAPEEEDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS
                                                                                              LAKFLHWLMSVYVVELLRSFFYVTETTFQKNRLFFYRKSVWSKLQSIGIRQHLKRVQLRE
                                                                                                                                                          LSEAEVRQHREARPALLTSRLRFI PKPDGLRPI VNMDYVVGARTFRREKRAERLTSRVKA
                                                                                                                                                                                                                                                                                                                                                        QETSPLRDAVVIEQSSSLNEASSGLFDVFLRFMCHHAVRIRGKSYVQCQGIPQGSILSTL
                                                                                                                                                                                                                                            PQDRLTEVIASIIKPQNTYCVRRYAVVQKAAHGHVRKAFKSHVSTLTDLQPYMRQFVAHL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Altered C-terminused telomerase protein sequence lacking motif A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Z
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   standard; protein; 1041
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          97US-0051410P.
97US-0053018P.
97US-0053329P.
97US-0054642P.
97US-0058287P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               98WO-US013835
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          01-JUL-1997;
21-JUL-1997;
21-JUL-1997;
04-AUG-1997;
09-SEP-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 26-JUL-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               WO9901560-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             01-JUL-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               14-JAN-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Synthetic.
                                                                                                                                                                                                                                                                                        721
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1009
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AAY00643;
                                                              481
                                                                                                                            541
                                                                                                                                                                                                                          661
                                                                                                                                                                                                                                                                                                                                                                                                                        841
                                                                                                                                                                                                                                                                                                                                                                                                                                                        829
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      889
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    949
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1021
                              481
                                                                                              541
                                                                                                                                                          601
                                                                                                                                                                                          601
                                                                                                                                                                                                                                                        661
                                                                                                                                                                                                                                                                                                                        711
                                                                                                                                                                                                                                                                                                                                                        781
                                                                                                                                                                                                                                                                                                                                                                                        492
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      901
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      961
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AAY00643
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RESULT 42
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AAY00643
                                                       셤
                                                                                                                   원
                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                8
                                                                                ઠે
                                                                                                                                                          8
                                                                                                                                                                                  g
                                                                                                                                                                                                                  8
                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                              ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                      ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                This sequence is a truncated human telomerase of the invention. Primers that amplify the telomerase coding sequence can be used in a method for diagnosing cancer in a patient. The telomerase can be used for detection, diagnosis and drug screening. Inhibitors of telomerase activity can be used to treat cancers such as melanomas, other skin cancers.

I pupplemas, osteosarcomas or smooth muscle cell hyperplasias or skin growths. Enhancers of telomerase may be used to stimulate stem cell proliferation and differentiation (expansion of haematopoietic stem cells proliferation and differentiation (expansion of these cells may be useful in wound healing, hair growth, treatment of disease such as Wilm's tumour, organ regeneration or differentiation after injury or diseases, there cell or brain cell growth following injury. Note: The N-terminus of this sequence can be replaced by the sequence shown in AAY00656-Y00658, and the C-terminus can be replaced by the sequence shown in AAY00655
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 9
                                                                                                                                                                                                                          for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1 MPRAPRCRAVRSLLRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DARPPPAAPSFROVSCLKELVARVLORLCERGAKNVLAFGFALLDGARGGPPEAFTTSVR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DARPPPAADSFRQVSCLKELVARVLQRLCERGAXNVLAFGFALLDGARGGPPEAFTTSVR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SYLPNTVTDALRGSGAWGLLLRRYGDDVLVHLLARCALFVLVAPSCAYQVCGPPLYQLGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ATQARPPHASGPRRRLGCERAWNHSVREAGVPLGLPAPGARRRGGSASRSLPLPKRPRR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ATQARPPPHASGPRRKLGCERAWNHSVREAGVPLGLPAPGARRRGGSASRSLPLPKRRRR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GAAPEPERTPVGGGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPABEATSLEGALSGTRHSHPSVG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ROHHAGPPSTSRPPRPWDTPCPPVYAETKHFLYSSGDKEQLRPSFLLSSLRPSLTGARRL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              VETIFLGSRPWMPGTPRRLPRLPQRYWQMRPLFLELLGNHAQCPYGVLLKTHCPLRAAVT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PAAGVCAREKPQGSVAAPEEEDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             VETIFLGSRPWMPGTPRRIPRLPRLPQRYWQMRPLFLELLGNHAQCPYGVLLKTHCPLRAAVT
                                                                                                                                                                                                                     isolated vertebrate telomerase genes - used to develop products fating cancers or for organ regeneration, nerve cell or brain cell wth following injury or bone marrow transplantation.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   12;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DB 2; Length 1041;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Pred. No. 0;
0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 91.7%; Score 5467;
98.8%; Pred. No. 0;
                                                                                                                                                                                                                                                                                      Claim 4; Fig 11am-an; 134pp; English.
          97US-0051410P.
97US-0053018P.
97US-0053329P.
97US-0054642P.
97US-0058287P.
                                                                                                         (CAMB-) CAMBIA BIOSYSTEMS LLC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
Best Local Similarity 98.8
Matches 1039; Conservative
                                                                                                                                                                                                                                       treating cancers or for growth following injury
                                                                                                                                         Bowtell D;
                                                                                                                                                                        WPI; 1999-106060/09.
N-PSDB; AAX18280.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sequence 1041 AA;
                                                         04-AUG-1997;
           01-JUL-1997
21-JUL-1997
                                           21-JUL-1997
                                                                                                                                        Kilian A,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           421
                                                                                                                                                                                                                       New
```

ò 셤 Š 셤 ò g ò 셤 ò 셤 Š 셤 Š 셤

Thu Jan

840

828 900

780 768 888 960

```
NRGFKAGRNMRRKLFGVLRLKCHSLFLDLQVNSLQTVCTNIYKILLLQAYRFHACVLQLP 1020
                                                                                                                                                                                                                                                                                                                                                                                                                  LFSVLNYERARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDPPFELYFVKVDVTGAYDTI 720
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Telomerase; human, cancer; diagnosis; melanoma; skin cancer; leukaemia; neuroblastoma; breast carcinoma; colon carcinoma; lymphoma; osteosarcoma; smooth muscle cell hyperplasia; stem cell proliferation; Wilm's tumour; stem cell differentiation; organ regeneration; organ differentiation.
         LAKFLHWLMSVYVVELLRSFFYVTETTFQKNRLFFYRKSVWSKLQSIGIRQHLKRVQLRE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     New isolated vertebrate telomerase genes - used to develop products for
                                                           PQDRLTEVIASIIKPQNTYCVRRYAVVQKAAHGHVRKAFKSHVSTLTDLQPYMRQFVAHL
                                                                                                                                                                           --DRLTEVIASIIKPQNTYCVRRYAVVQKAAHGHVRKAFKSHVSTLTDLQPYMRQFVAHL
                                                                                                                                                                                                                  QETSPLRDAVVIEQSSSLNEASSGLFDVFLRFMCHHAVRIRGKSYVQCQGIPQGSILSTL
                                                                                                                                                                                                                                     RKTVVNFPVEDBALGGTAFVQMPAHGLFPWCGLLLDTRTLEVQSDYSSYARTSIRASLTF
                                                                                                                                                                                                                                                                                                                                                           LSEAEVROHREARPALLTSRLRFI PKPDGLRPIVNMDYVVGARTFRREKRAERLTSRVKA
                                                                                                                                                                                                                                                                             LCSLCYGDMENKLFAGIRRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPBYGCVVNL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   N-terminal truncated telomerase protein sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                            FHOOVWKNPTFFLRVISDTASLCYSILKAKNA 1052
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             FHQQVWKNPTFFLRVISDTASLCYSILKAKNA 1040
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   į
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AAY00639 standard; protein; 948
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         97US-0053018P.
97US-0053329P.
97US-0054642P.
97US-0058287P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LLC.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               98WO-US013835
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              97US-0051410P
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Bowtell D;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            WPI; 1999-106060/09.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         N-PSDB; AAY00639
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (CAMB-) CAMBIA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       26-JUL-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    WO9901560-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             01-JUL-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         21-JUL-1997;
21-JUL-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             01-JUL-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     09-SEP-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   14-JAN-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        04-AUG-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Synthetic.
                                        601
                                                                   601
                                                                                                661
                                                                                                                            661
                                                                                                                                                        721
                                                                                                                                                                                      711
                                                                                                                                                                                                                                                                                                           829
                                                                                                                                                                                                                                                                                                                                                                                                                                                           1021
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1009
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Kilian A,
                                                                                                                                                                                                                    781
                                                                                                                                                                                                                                                769
                                                                                                                                                                                                                                                                             841
                                                                                                                                                                                                                                                                                                                                         901
                                                                                                                                                                                                                                                                                                                                                                   889
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AAY00639;
                                                                                                                                                                                                                                                                                                                                                                                                 961
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Homo
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             RESULT
                                                           셤
                            à
                                                                                               ₽
                                                                                                                         Ω
                                                                                                                                                                                   유
                                                                                                                                                     δ
                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                            ઠે
                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                                               à
                                                                                                                                                                                                                                                                                                                                                                                                                        ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                8
                                                                                                                                                                                    This sequence is a truncated human telomerase of the invention. Primers that amplify the telomerase coding sequence can be used in a method for diagnosing cancer in a patient. The telomerase can be used for detection, diagnosis and drug screening. Inhibitors of telomerase activity can be used to treat cancers such as melanomas, other skin cancers.

The contract cancers such as melanomas, other skin cancers, is neuroblastomas, beast carcinomas, other skin cancers.

The contract cancers of telomerase may be used to stimulate stem cell growths. Enhancers of telomerase may be used to stimulate stem cell could be administered in the bone marrow transplant context). As well, many tissues have stem cells. Proliferation of these cells may be useful tumour, organ regeneration or differentiation after injury or diseases, the ve cell or brain cell growth (alsease such as Wilm's tumour, organ regeneration or differentiation after injury or diseases, the sequence can be replaced by the sequence shown in AAY00654
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DARPPPAAPSFRQVSCLKELVARVLQRLCERGAKNVLAFGFALLDGARGGPPEAFITSVR 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG 300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   LAKFLHWLMSVYVVELLRSFFYVTETTFQKNRLFFYRKSVWSKLQSIGIRQHLKRVQLRE 600
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       MPRAPRCRAVRSILRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SYLPNITYIDALRGSGAWGLILERRVGDDVLVHLLARCALFVLVAPSCAYQVCGPPLYQLGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    RQHHAGPPSTSRPPRPWDTPCPPVYAETKHFLYSSGDKEQLRPSFLLSSLRPSLTGARRL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                VETIFLGSRPWMPGTPRRLPRLPQRYWQMRPLFLELLGNHAQCPYGVLLKTHCPLRAAVT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    New isolated vertebrate telomerase genes - used to develop products treating cancers or for organ regeneration, nerve cell or brain cell growth following injury or bone marrow transplantation.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ATQARPPPHASGPRRRIGCERAWNHSVREAGVPLGLPAPGARRRGGSASRSLPLPKRPRR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PAAGVCAREKPQGSVAAPEEEDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RHNERRFLRNTKKFISLGKHAKLSLQELTWKMSVRDCAWLRRSPGVGCVPAAEHRLREEI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  12;
                                                                                                                                                                                                                                                                                                                                                                                                                                                              Claim 4; Fig 11r-s; 134pp; English.
   LLC.
(CAMB-) CAMBIA BIOSYSTEMS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Best Local Similarity 98.8 Matches 1039; Conservative
                                                         WPI; 1999-106060/09.
N-PSDB; AAX18271.
                                                                                                                                                                                                                                                                                                                                                                                                                                  Sequence 1041 AA;
                          Kilian A,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 61
                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    481
```

à 요 ò g ठ 셤 ò 셤 ò 엄 ò 셤 ò 셤

В ò

ò 셤

```
AAY00648

XX

AAY

AA
                                                       g
                                                                                                            ò
                                                                                                                                               a
                                                                                                                                                                                               à
                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                       8
                                                                                                     This sequence is a truncated human telomerase of the invention. Primers that amplify the telomerase coding sequence can be used in a method for diagnosing cancer in a patient. The telomerase can be used for detection, diagnosis and drug screening. This iters of telomerase activity can be used to treat cancers such as melanomas, other skin cancers, neuroblastomas, breast carcinomas, colon carcinomas, leukaemias, lymphomas, osteosarcomas or smooth muscle cell hyperplasias or skin growths. Enhancers of telomerase may be used to stimulate stem cell proliferation and differentiation (expansion of haematopoietic stem cells could be administered in the bone marrow transplant context). As well, many tissues have stem cells. Proliferation of these cells may be useful in wound healing, hair growth, treament of disease such as Wilm's tumour, organ regeneration or differentiation after injury or diseases, nerve cell or brain cell growth following injury
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               720
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GAAPEPERTPVGGGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG 300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RQHHAGPPSTSRPPRPWDTPCPPVYAETKHFLYSSGDKEQLRPSFLLSSLRPSLTGARRL 360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                RQHHAGPPSTSRPPRPWDTPCPPVYAETKHFLYSSGDKEQLRPSFLLSSLRPSLLGARRL 360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        720
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      181 ATQARPPPHASGPRRKIGCERAWNHSVREAGVPLGLPAPGARRRGGSASRSLPLPKRPRR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MPRAPRCRAVRSLLRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1 MPRAPRCRAVRSLLRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DARPPPAAPSFRQVSCLKELVARVLQRLCERGAKNVLAFGFALLDGARGGPPEAFTTSVR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DARPPPAAPSFRQVSCLKELVARVLQRLCERGAKNVLAFGFALLDGARGGPPEAFTTSVR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LAKFLHWLMSVYVVELLRSFFYVTETTFQKNRLFFYRKSVWSKLQSIGIRQHLKRVQLRE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           LAKFLHWLMSVYVVELLRSFFYVTETTFQKNRLFPYRKSVWSKLQSIGIRQHLKRVQLRE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              LSEAEVROHREARPALLISRLRFIPKPDGLRPIVNMDYVVGARTFRREKGAERLTSRVKA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      LFSVLNYERARRPGLIGASVLGLDDIHRAWRTFVLRVRAQDPPPELYFVKVDVTGAYDTI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SYLPNTVTDALRGSGAWGLLLRRVGDDVLVHLLARCALFVLVAPSCAYQVCGPPLYQLGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ATQARPPPHASGPRRIGCERAWNHSVREAGVPLGLPAPGARRRGGSASRSLPLPKRPRR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            VETI FLGSR PWMPGTPRRLPRLPQRYWQMRPLFLELLGNHAQCPYGVLLKTHCPLRAAVT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PAAGVCAREKPQGSVAAPEEEDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PAAGVCAREKPOGSVAAPEEEDTDPRRLVOLLROHSSPWOVYGFVRACLRRLVPPGLWGS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     RHNERFIERNTKKFISLGKHAKLSLOELTWKMSVRDCAWLRRSPGVGCVPAAEHRLREET
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RHNERRFLRNTKKFISLGKHAKLSLQELTWKMSVRDCAWLRRSPGVGCVPAAEHRLREEI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       LSEAEVRQHREARPALLTSRLRFIPKPDGLRPIVNMDYVVGARTFRREKRAERLTSRVKA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            LFSVLNYERARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDPPPELYFVKVDVTGAYDTI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gaps
  cancers or for organ regeneration, nerve cell or brain cell
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2; Length 948;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Indels
                    growth following injury or bone marrow transplantation.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Score 5008; D
Pred. No. 0;
1; Mismatches
                                                                Claim 4; Fig 11j-k; 134pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
Best Local Similarity 99.9%;
Matches 946; Conservative 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                  Sequence 948 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Н
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        661
    treating
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               661
셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              용
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ઠ
```

```
This sequence is a truncated human telomerase of the invention. Primers that amplify the telomerase coding sequence can be used in a method for diagnosing cancer in a patient. The telomerase can be used for detection, diagnosis and drug screening. Inhibitors of telomerase activity can be used to treat cancers such as melanomas, other skin cancers, neuroblastomas, breast carcinomas, ocher scrinomas, leukaemias, humphomas, osteosarcomas or smooth muscle cell hyperplasias or skin growths. Enhancers of telomerase may be used to stimulate stem cell proliferation and differentiation (expansion of haematopoletic stem cells could be administered in the bone marrow transplant context). As well, many tissues have stem cells. Proliferation of these cells may be useful in wound healing, hair growth, treatment of disease such as Wilm's
                   780
                                                                                                                                                                                                         900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    neuroblastoma; breast carcinoma; colon carcinoma; lymphoma; osteosarcoma; smooth muscle cell hyperplasia; stem cell proliferation; Wilm's tumour; stem cell differentiation; organ regeneration; organ differentiation.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Felomerase; human; cancer; diagnosis; melanoma; skin cancer; leukaemia;
                                                                                                                                                                                                                                            LCSLCYGDMENKLFAGIRRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGCVVNL
PQDRLTEVIASIIKPQNTYCVRRYAVVQKAAHGHVRKAFKSHVSTLTDLQPYMRQFVAHL
                                                                                 QETSPLRDAVVIEQSSSLNEASSGLFDVFLRFMCHHAVRIRGKSYVQCQGIPQGSILSTL
                                                                                                                                           QETSPLRDAVVIEQSSSLNEASSGLFDVFLRFMCHHAVRIRGKSYVQCQGIPQGSILSTL
                                                                                                                                                                                                         LCSLCYGDMENKLFAGIRRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGCVVNL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            New isolated vertebrate telomerase genes - used to develop products f
treating cancers or for organ regeneration, nerve cell or brain cell
growth following injury or bone marrow transplantation.
                                                                                                                                                                                                                                                                                                                                    947
                                                                                                                                                                                                                                                                                                                                                                 RKTVVNFPVEDEALGGTAFVQMPAHGLFPWCGLLLDTRTLEVQSDYS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Truncated telomerase 3 protein sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Claim 4; Fig 11ad-ae; 134pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Ź
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AAY00648 standard; protein; 948
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                97US-0051410P.
97US-0053018P.
97US-0053329P.
97US-0054642P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             LLC.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         98WO-US013835
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            97US-0058287P
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (CAMB-) CAMBIA BIOSYSTEMS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Kilian A, Bowtell D;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     WPI; 1999-106060/09.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (first
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  N-PSDB; AAX18276.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              WO9901560-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         01-JUL-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  26-JUL-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    21-JUL-1997;
21-JUL-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           14-JAN-1999.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  04-AUG-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               39-SEP-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Synthetic.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AAY00648;
                                                                                                                                                                                                                                                                      841
                   721
                                                                                                                                           781
                                                                                                                                                                                                            841
                                                                                                                                                                                                                                                                                                                                                                                              901
                                                                                 781
                                                                                                                                                                                                                                                                                                                                 901
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ношо
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             RESULT 44
```

SXSSS

8 6 8 6 8 6

g

ò

셤

8 6 8 6

8 6

a

ò

쉱

8 6

ò

ò

6 6 6 6 6 6 6

ò

```
Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       61
                             В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
              늉
                                                                                                                         120
                                                                                                                                          120
                                                                                                                                                                                                                           300
                                                                                                                                                         180
                                                                                                                                                                240
                                                                                                                                                                                                           240
                                                                                                                                                                                                                                           300
                                                                                                                                                                                                                                                           360
                                                                                                                                                                                                                                                                            360
                                                                                                                                                                                                                                                                                             420
                                                                                                                                                                                                                                                                                                             420
                                                                                                                                                                                                                                                                                                                               480
                                                                                                                                                                                                                                                                                                                                              480
                                                                                                                                                                                                                                                                                                                                                               540
                                                                                                                                                                                                                                                                                                                                                                               540
                                                                                                                                                                                                                                                                                                                                                                                                900
                                                                                        9
                                                                                                        9
                                                                                                                                                                                                                                                                                                                                                                                                                600
                                                                                                                                                                                                                                                                                                                                                                                                                                 99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     840
                                                                                                                                                                                                                                                                                                                                                                                                                                                 99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 720
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  720
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   780
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   780
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    840
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      900
tumour, organ regeneration or differentiation after injury or diseases, nerve cell or brain cell growth following injury. Note: The N-terminus cthis sequence can be replaced by the sequences shown in AAY00656-Y00658
                                                                                                   MPRAPRCRAVPSLLESHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW
                                                                                                                               MPRAPRCRAVRSLLRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW
                                                                                                                     DARPPPAAPSFRQVSCLKELVARVLQRLCERGAKNVLAFGFALLDGARGGPPBAFTTSVR
                                                                                                                                                     SYLPNTVTDALRGSGAWGLLLRRVGDDVLVHLLARCALFVLVAPSCAYQVCGPPLYQLGA
                                                                                                                                                                                                  GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG
                                                                                                                                                                                      ATQARPPHASGPRRRLGCERAWNHSVREAGVPLGLPAPGARRRGGSASRSLPLPKRPRR
                                                                                                                                                                                                                                   RQHHAGPPSTSRPPRPWDTPCPPVYAETKHFLYSSGDKEQLRPSFLLSSLRPSLTGARRL
                                                                                                                                                                                                                                                                   VETIFLGSRPWMPGTPRRLPRLPQRYWOMRPLFLELLGNHAQCPYGVLLKTHCPLRAAVT
                                                                                                                                                                                                                                                                                                    PAAGVCAREKPQGSVAAPEEEDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS
                                                                                                                                                                                                                                                                                                                                     LSEAEVROHREARPALLTSRLRFIPKPDGLRPIVNMDYVVGARTFRREKRAERLTSRVKA
                                                                                                                                                                                                                                                                                                                                                            RHNERRFLRNTKKFI SLGKHAKLSLQELTWKMSVRDCAWLRRSPGVGCVPAAEHRLREEI
                                                                                                                                                                                                                                                                                                                                                                     LSEAEVRQHREARPALLISRLRFIPKPDGLRPIVNMDYVVGARIFRREKRAERLISRVKA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PODRLTEVIASIIKPONTYCVRRYAVVOKAAHGHVRKAFKSHVSTLTDLOPYMROFVAHL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                               LFSVLNYERARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDPPPELYFVKVDVTGAYDTI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                QETSPLRDAVVIEQSSSLNEASSGLFDVFLRFMCHHAVRIRGKSYVQCQGIPQGSILSTL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 LCSLCYGDMENKLFAGIRRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGCVVNL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             LCSLCYGDMENKLFAGIRRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGCVVNL
                                                                        ;
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     947
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     947
                                                                       Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 RKTVVNPPVEDEALGGTAFVQMPAHGLPPWCGLLLDTRTLEVQSDYS
                                                      Length
                                                                       1;
                                                      5:
                                                      В
                                                   83.9%; Score 5004; D
99.9%; Pred. No. 0;
ive 0; Mismatches
                                               ouery Match
Best Local Similarity 99.99
Matches 946; Conservative
                                   Sequence 948 AA;
                                                                                                                      61
                                                                                                                                                                                                                                                                                                                                                                             481
                                                                                                                                                      121
                                                                                                                                                                                       181
                                                                                                                                                                                                        181
                                                                                                                                                                                                                                                                          301
                                                                                                                                                                                                                        241
                                                                                                                                                                                                                                                                                          361
                                                                                                                                                                                                                                                                                                           361
                                                                                                                                                                                                                                                                                                                                           421
                                                                                                                                                                                                                                                         301
                                                                                                                                                                                                                                                                                                                            421
                                                                                                                                                                                                                                                                                                                                                            481
                                                                                                                                                                                                                                                                                                                                                                                             541
                                                                                                                                                                                                                                                                                                                                                                                                             541
                                                                                                                                                                                                                                                                                                                                                                                                                              601
                                                                                                                                                                                                                                                                                                                                                                                                                                              601
                                                                                                                                                                                                                                                                                                                                                                                                                                                               661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               721
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                721
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 781
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                781
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  841
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  901
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  901
```

```
This sequence is a truncated human telomerase of the invention. Primers that amplify the telomerase coding sequence can be used in a method for diagnosing cancer in a patient. The telomerase can be used for detection, cliental and drug screening. Inhibitors of telomerase activity can be used to treat cancers such as melanomas, other skin cancers.

This properties to the expectation of smooth muscle cell hyperplasias or skin growths. Enhancers of telomerase may be used to stimulate stem cell proliferation and differentiation (expansion of haematopoietic stem cells could be administered in the bone marrow transplant context). As well, many tissues have stem cells. Proliferation of these cells may be useful in wound healing, hair growth, treatment of disease such as Wilm's tumour, organ regeneration or differentiation after injury or diseases, contents of the enve cell or brain cell growth following injury
                                                                                                                                                                                                                                   neuroblastoma; breast carcinomā; colon carcinoma; lymphoma; osteosarcoma; smooth muscle cell hyperplasia; stem cell proliferation; Wilm's tumour; stem cell differentiation; organ regeneration; organ differentiation.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        9
                                                                                                                                                                                                       Telomerase; human; cancer; diagnosis; melanoma; skin cancer; leukaemia;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DARPPPAAPSFRQVSCLKELVARVLQRLCERGAKNVLAFGFALLDGARGGPPEAFTTSVR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1 MPRAPRCRAVRSILRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                New isolated vertebrate telomerase genes - used to develop products treating cancers or for organ regeneration, nerve cell or brain cell growth following injury or bone marrow transplantation.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      12;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DB 2; Length 936;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Indele
                                                                                                                                                                 Ä
                                                                                                                                                   Truncated telomerase protein sequence lacking motif
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Score 4932; DE
Pred. No. 0;
0; Mismatches
     ġ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Claim 4; Fig 11p-q; 134pp; English.
AAY00642 standard; protein; 936
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ,
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     97US-0051410P.
97US-0053018P.
97US-0053329P.
97US-0054642P.
97US-0058287P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (CAMB-) CAMBIA BIOSYSTEMS LLC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       82.7%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            98WO-US013835
                                                                                                     (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Best Local Similarity 98., Matches 935; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ä
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      WPI; 1999-106060/09.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Bowtell
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  N-PSDB; AAX18270.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Sequence 936 AA;
                                                                                                                                                                                                                                                                                                                                        Homo sapiens.
Synthetic.
                                                                                                                                                                                                                                                                                                                                                                                                                  WO9901560-A1.
                                                                                                     26-JUL-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       01-JUL-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       04-AUG-1997;
09-SEP-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   14-JAN-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           01-JUL-1997,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   21-JUL-1997;
21-JUL-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Kilian A,
```

```
This sequence is a truncated human telomerase of the invention. Primers that amplify the telomerase coding sequence can be used in a method for diagnosing cancer in a patient. The telomerase can be used for detection, diagnosis and drug screening. Inhibitors of telomerase activity can be used to treat cancers such as melanomas, other skin cancers, neuroblastomas, breast carcinomas, colon carcinomas, leukaemias, lymphomas, osteosarcomas or smooth muscle cell hyperplasias or skin growths. Enhancers of telomerase may be used to stimulate stem cell proliferation and differentiation (expansion of haematopoietic stem cells
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DARPPPAAPSFRQVSCLKELVARVLQRLCERGAKNVLAFGFALLDGARGGPPEAFTTSVR 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 could be administered in the bone marrow transplant context). As well, many tissues have stem cells. Proliferation of these cells may be useful in wound healing, hair growth, treatment of disease such as Wilm's tumour, organ regeneration or differentiation after injury or diseases, nerve cell or brain cell growth following injury. Note: The N-terminus of this sequence can be replaced by the sequences shown in AAY00656-Y00658
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1 MPRAPRCRAVRSLIRSHTREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SYLPNIVIDALRGSGAWGLLLRRVGDDVLVHLLARCALFVLVAPSCAYQVCGPPLYQLGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SYLPNIVIDALRGSGAWGLLLRRVGDDVLVHLLARCALFVLVAPSCAYQVCGPPLYQLGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GAAPEPERTPVGGGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1 MPRAPRCRAVRSLLRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RQHHAGPPSTSRPPRPWDTPCPPVYAETKHFLYSSGDKEQLRPSFLLSSLRPSLTGARRL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ATQARPPHASGPRRRLGCERAWNHSVREAGVPLGLPAPGARRGGSASRSLPLPKRPRR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Length 936;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  82.6%; Score 4923; DB 2; 98.6%; Pred. No. 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Pred. No. 0;
0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Claim 4; Fig 11ak-al; 134pp; English.
                                                                                                                                                                                             97US-0051410P.
97US-0053018P.
97US-0053329P.
97US-0054642P.
97US-0058287P.
                                                                                                                                                                                                                                                                                                                                 (CAMB-) CAMBIA BIOSYSTEMS LLC
                                                                                                                                                        98WO-US013835
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Matches 934; Conservative
                                                                                                                                                                                                                                                                                                                                                                               ä
                                                                                                                                                                                                                                                                                                                                                                                                                         WPI; 1999-106060/09.
N-PSDB; AAX18279.
                                                                                                                                                                                                                                                                                                                                                                               Bowtell
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Sequence 936 AA;
  sapiens
                                                              WO9901560-A1
                                                                                                                                                                                                                                           21-JUL-1997;
04-AUG-1997;
09-SEP-1997;
                                                                                                                                                        01-JUL-1998;
                                                                                                                                                                                               01-JUL-1997
                                                                                                            14-JAN-1999
                       Synthetic.
                                                                                                                                                                                                                                                                                                                                                                               Kilian A,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Local
셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    임
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              888
                                                                                                          240
                                                                                                                                                                                                  300
                                                                                                                                                                                                                                           300
                                                                                                                                                                                                                                                                                       360
                                                                                                                                                                                                                                                                                                                                 360
                                                                                                                                                                                                                                                                                                                                                                             420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             840
                                                                                                                                                                                                                                                                                                                                                                                                                         420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                720
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       780
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               768
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Telomerase; human; cancer; diagnosis; melanoma; skin cancer; leukaemia; neuroblastoma; breast carcinoma; colon carcinoma; lymphoma; osteosarcoma; smooth muscle cell hyperplasia; stem cell proliferation; Wilm's tumour; stem cell differentiation; organ regeneration; organ differentiation.
                SYLPNTYTDALRGSGAMGLLIRRYGDDVIVHLLARCALFVIVAPSCAYOVGPPLYQLGA
                                                                                                                                                                                                                       GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            LCSLCYGDMENKLFAGIRRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGCVVNL
                                                                                                        ATQARPPPHASGPRRRLGCERAWNHSVREAGVPLGLPAPGARRRGGSASRSLPLPKRPRR
                                                                                                                                                   ATÓARPPHASGPRRRLGCERAWNHSVREAGVPLGLPAPGARRRGGSASRSLPLPKRPRR
                                                                                                                                                                                                  GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG
                                                                                                                                                                                                                                                                                     ROHHAGPPSTSRPPRPWDTPCPPVYAETKHFLYSSGDKEQLRPSFLLSSLRPSLTGARRL
                                                                                                                                                                                                                                                                                                              RQHHAGPPSTSRPPRPWDTPCPVYAETKHFLYSSGDKEQLRPSFLLSSLRPSLTGARRL
                                                                                                                                                                                                                                                                                                                                                                                                      VETIFLGSRPWMPGTPRRLPRLPQRYWQMRPLFLELLGNHAQCPYGVLLXTHCPLRAAVT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PAAGVCAREKPQGSVAAPEEEDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PAAGVCAREKPQGSVAAPEBEDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RHNERRFLRNTKKFISLGKHAKLSLQELTWKMSVRDCAWLRRSPGVGCVPAAEHRLREEI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  LAKFLHWLMSVYVVELLRSFFYVTETTFOKNRLPFYRKSVWSKLOSIGIROHLKRVQLRE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         LAKFLHHLMSVYVVELLRSFFYVTETTFQKNRLFFYRKSVWSKLQSIGIRQHLKRVQLRE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        LSEAEVROHREARPALLTSRLRFIPKPDGLRPIVNMDYVVGARTFRREKRAERLTSRVKA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LSEAEVROHREARPALLTSRLRFIPKPDGLRPIVNMDYVVGARTFRREKRAERLTSRVKA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LFSVLNYERARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDPPPELYFVKVDVTGAYDTI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               --DRLTEVIASIIKPONTYCVRRYAVVOKAAHGHVRKAFKSHVSTLTDLQPYMRQFVAHL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    QETSPLRDAVVIEQSSSINEASSGLFDVFLRFMCHHAVRIRGKSYVQCQGIPQGSILSTL
                                                                                                                                                                                                                                                                                                                                                                             VETIFLGSRPWMPGTPRRLPRLPQRYWQMRPLFLELLGNHAQCPYGVLLKTHCPLRAAVT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RHNERRFLRNTKKFISLGKHAKLSLQELTWKMSVRDCAWLRRSPGVGCVPAAEHRLREEI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         LFSVLNYERARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDPPPELYFVK------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PODRLTEVIASI IKPONTYCVRRYAVVOKAAHGHVRKAFKSHVSTLTDLOPYMRQFVAHL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             QETSPLRDAVVIEQSSSLNEASSGLFDVFLRFMCHHAVRIRGKSYVQCQGIPQGSILSTL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     LCSLCYGDMENKLFAGIRRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGCVVNL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2) protein sequence lacking motif A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      935
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RKTVVNFPVEDEALGGTAFVQMPAHGLFPWCGLLLDTRTLEVQSDYS 947
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               protein; 936
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     telomerase (ver.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         26-JUL-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Truncated
                                                              121
                                                                                                                                                   181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AAY00651;
                                                                                                          181
                                                                                                                                                                                                                                                                                       301
                                                                                                                                                                                                                                                                                                                                 301
                                                                                                                                                                                                                                                                                                                                                                             361
                                                                                                                                                                                                                                                                                                                                                                                                                         361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       721
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          901
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    889
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             781
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AAY00651
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AAY00651
11D AAY0
11D AAY0
12C AAY0
12C
                                                         셤
                                                                                                          ઠે
                                                                                                                                             g
                                                                                                                                                                                             ò
                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                   à
                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                              δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
```

ĕ

for

180 180

9

Gaps

12;

셤

ò

ò 셤 ò

셤

g

ò g ò g ò 유 ò 셤 ò g ð 유

```
This polypeptide comprises a large portion of human telomerase protein 2 (TP2), a novel protein of the telomerase complex. Its amino acid sequence was deduced from partial cDNA clone 32 (see AAV27872), obtained from a chuman colon tumour cell line LIM1863 cDNA. A full-length polypeptide sequence (see AAW61350) is also disclosed. Expressing TP2 in a cell is used to increase telomerase activity and thus proliferation for treatment of e.g. HV infection. AIDS and againg disorders while expressing an inactive mutant of TP2 (or molecule antisense to the gene) is used to decrease telomerase activity, e.g. for treatment of cancer. TR2 clorypeptides can also be used to screen for agents that inhibit TP2 activity or its binding to TRIPI (see AAW61347) or telomerase RNA, cotentially useful therapeutically, also to raise specific antibodies useful in immunoassays and therapeutically as inhibitors. Also contemplated are transagenic animals in which the TP2 gene has been inactivated or is overexpressed. TP2 polypeptides are administered i.v., co. or orally, or they are delivered from engineered cells or gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DARPPAARSFROVSCLKELVARVLORLCERGAKNVLAFGFALLDGARGGPPEAFTTSVR 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DARPPPAAPSFRQVSCLKELVARVLORLCERGAKNVLAFGFALLDGARGGPEAFTTSVR 142
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   VETIFLGSRPWMPGTPRRLPRLPQRYWQMRPLFLELLGNHAQCPYGVLLKTHCPLRAAVT 420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          23 MPRAPRCRAVRSLLRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ATQARPPPHASGPRRRLGCERAWNHSVREAGVPLGLPAPGARRRGGSASRSLPLPKRPRR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      263 GAAPEPERTPVGQGSWAHPGRIKGPSDRGFCVVSPARPAEEAISLEGALSGIRHSHPSVG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RQHHAGPPSTSRPPRPWDTPCPPVYAETKHFLYSSGDKEQLRPSFLLSSLRPSLTGARRL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        RQHHAGPPSTSRPPRPWDTPCPPVYAETKHFLYSGGDKEQLRPSFLLSSLRPSLTGARRL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1 MPRAPRCRAVRSLLRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ATQARPPHASGPRRRLGCERAWNHSVREAGVPLGLPAPGARRRGGSASRSLPLPKRPRR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SYLPNTVTDALRGSGAWGLLLRRVGDDVLVHLLARCALFVLVAPSCAYQVCGPPLYQLGA
                                                                                                                                                                                                                                                                                                      New nucleic acid encoding human telomerase protein-2 - used for regulating telomerase activity, e.g. for treating cancer or acquired immune deficiency syndrome.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gape
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ;
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length 949;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Indele
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DB 2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   82.2%; Score 4900; D
100.0%; Pred. No. 0;
Live 0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                           Claim 1d; Fig 6; 150pp; English
                                                                                                 96US-00751189.
97US-00873039.
97US-00951733.
                                                                   97WO-US021248
                                                                                                                                                                                                                      Harrington LA, Robinson MO;
                                                                                                                                                                     AMGEN INC.
AMGEN CANADA INC.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Matches 927; Conservative
                                                                                                                                                                                                                                                        WPI; 1998-297946/26.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                        N-PSDB; AAV27872.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Sequence 949 AA;
WO9821343-A1
                                                                   13-NOV-1997;
                                                                                                                   11-JUN-1997;
                                 22-MAY-1998
                                                                                                   15-NOV-1996
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          83
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   323
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 203
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               241
                                                                                                                                                                     AMGE-)
                                                                                                                                                                                    (AMGE-)
ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                 480
                                                                                                                                                   540
                                                                                                                 480
                                                                                                                                                                                                                    600
                                                                                                                                                                                                                                                    9
                                                                                                                                                                                                                                                                                      99
                                                                                                                                                                                                                                                                                                                        9
                                                                                                                                                                                                                                                                                                                                                         720
                                                                                                                                                                                                                                                                                                                                                                                           710
                                                                                                                                                                                                                                                                                                                                                                                                                         780
                                                                                                                                                                                                                                                                                                                                                                                                                                                             768
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               840
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             828
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                888
            VETI FLGSRPWMPGTPRRLPRLPQRYWQMRPLFLELLGNHAQCPYGVLLKTHCPLRAAVT
                                 VETIFICSRPWMPGTPRRLPRLPQRYWQMRPLFLELLGNHAQCPYGVLLKTHCPLRAAVT
                                                                                                     RHNERRFLENTKKFISLGKHAKLSLQELTWKMSVRDCAWLRRSPGVGCVPAAEHRLREEI
                                                                                                                                                                                                                                    LSEAEVRQHREARPALLISRLRFIPKPDGLRPIVNMDYVVGARTFRREKRAERLTSRVKA
                                                                                                                                                                                                                                                                                                                                                                           LFSVLNYERARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDPPPELYFVK-------
                                                                                                                                                                                                                                                                                                                                                                                                                                             --DRLTEVIASIIKPQNTYCVRRYAVVQKAAHGHVRKAFKSHVSTLTDLQPYMRQFVAHL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LCSLCYGDMENKLFAGIRRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGCVVNL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LCSLCYGDMENKLFAGIRRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGCVVNL
                                                                              PAAGVCAREKPQGSVAAPEEEDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS
                                                                                                                                             RHNERRFLRNTKKFISLGKHAKLSLQELTWKMSVRDCAWLRRSPGVGCVPAAEHRLREEI
                                                                                                                                                                                                                 LAKFLHWLMSVYVVELLRSFFYVTETTFQKNRLFFYRKSVWSKLQSIGIRQHLKRVQLRE
                                                                                                                                                                                                                                                                                   LSEAEVROHREARPALLTSRLRFIPKPDGLRPIVNMDYVVGARTFRREKRAERLTSRVKA
                                                                                                                                                                                                                                                                                                                                                    LFSVLNYBRARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDPPPELYFVKVDVTGAYDTI
                                                                                                                                                                                                                                                                                                                                                                                                                        721 PODRLTEVIASIIKPONTYCVRRYAVVOKAAHGHVRKAFKSHVSTLTDLOPYMRQFVAHL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         QETSPLRDAVVIEQSSSLNEASSGLFDVFLRFMCHHAVRIRGKSYVQCQGIPQGSILSTL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 IP2; human; telomerase protein 2; cancer; AIDS; ageing; therapy.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             RKTVVNFPVEDEALGGTAFVQMPAHGLFPWCGLLLDTRTLEVQSDYS 947
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Human telomerase protein 2 (TP2) partial polypeptide.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Location/Qualifiers
1. .640
'note= "Claim 24"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        582. .587
640. .940
/note= "Claim 22"
644. .648
696. .953
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /note= "Claim 24"
852. .857
884. .8894
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             "Claim 24"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        "Claim 24"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AAW61349 standard; protein; 949
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /note= "Cl
696. .940
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1. .563
/note= "(
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (revised)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                25-MAR-2003
12-OCT-1998
                                            361
                                                                                                            421
                                                                                                                                                                                                                                                 541
            361
                                                                                                                                             481
                                                                                                                                                                               481
                                                                                                                                                                                                               541
                                                                                                                                                                                                                                                                                   601
                                                                                                                                                                                                                                                                                                                                                    199
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           694
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AAW61349;
                                                                                                                                                                                                                                                                                                                    601
                                                                                                                                                                                                                                                                                                                                                                                      661
                                                                                                                                                                                                                                                                                                                                                                                                                                                        711
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         781
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              901
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            889
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Region
Protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Region
Protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Region
Region
```

300

322

180 202 240 262

82

ò 셤 ò 유 셤 ઠે g à 셤 ò g ઠે 셤 ઠે 셤 δ 셤

Š

```
180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AFGRRKQAQHFTQRLKTLFSVLNYERTKHPHLLGASVLGMNDIYRTWRTFVLRVRALDPT 720
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    820
                                                                                                                                                                                                                                                                                                                                          120
                                                                                                                                                                                                                                                                                                                                                                                                                                                             231
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   291
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          351
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            411
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             466
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     526
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               583
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          600
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        643
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                703
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          762
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         in a mammalian subject that is specific for its own telomerase reverse transcriptase (TERT), comprising administering an immunogenic composition containing a protein with at least 20 consecutive amino acids of TERT of another mammalian species, or a nucleic acid encoding the protein. A activity. The protein or the nucleic acid encoding the protein. A activity. The protein or the nucleic acid encoding the protein is useful in the manufacture of a medicament for the treatment of cancer in a human or for eliciting a cytotoxic T cell response in a human.
                                                                                                                                                                                                                                                                                                           9
                                                                                                                                                                                                                                                                                                                                                                                                                  TTQARPPPHASGRPRRPVGRNPTNLGFCERAWNHSVREAGVPLGLPSPGAKRRGGSASRS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   LPLPKRPRRGAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SYLPNTVTDALRGSGAWGLLLRRVGDDVLVHLLARCALFVLVAPSCAYQVCGPPLYQLGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TRHSHPSVGRQHHAGPPSTSRPPRPWDTPCPPVYAETKHFLYSSGDKEQLRPSFLLSSLR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GCVPAAEHRLREEILAK---FLHWLMSVYVVELLRSFFYVTETTFQKNRLFFYRKSVWSK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ESVPAAEHRLRERILAKEHPFLFWLMSVYVVELLRSFFYITESTFQKNRLFFYRKSVWSK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         LOSIGVROHLERVRLRELSOEEVROHOEAWPAMPICRLRFIPKPNGLRPIVNMSYSMGTR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PELYFVKVDVTGAYDTIPQDRLTEVIASIIK-PQNTYCVRRYAVVQKAAHGHVRKAFKSH
                                                                                                                                                                                                                                                                                                                                           DARPPPAAPSFROVSCLKELVARVLORLCERGAKNVLAFGFALLDGARGGPPEAFTTSVR
                                                                                                                                                                                                                                                                                                                                                                     GARPPPAAPSFHQVSSLKELVARVVQRLCERGERNVLAFGFALLDGARGGPPMAFTTSVR
                                                                                                                                                                                                                                                                                                                                                                                                                                                           ATQARPPPHASG-PRRRLG-----CERAWNHSVREAGVPLGLPAPGARRRGGSASRS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PSLTGARRLVETIFLGSRPWMPGTPRRLPRLPQRYWQMRPLFLELLGNHAQCPYGVLLKT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TFRREKRAERLTSRVKALFSVLNYERARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDPP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    VSTLTDLQPYMRQFVAHLQET -- SPLRDAVVIEQSSSLNEASSGLFDVFLRFMCHHAVRI
                                                                                                                                                                                                                                                                                  MPRAPRCRAVRSLLRSHYREVLPLATFVRRLGPOGWRLVQRGDPAAFRALVAQCLVCVPW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             HCPLRAAVTPAAGVCAREXPQGSVAAPEE----EDTDPRRLVQLLRQHSSPWQVYGFVR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        LOSIGIROHLKRVOLRELSEAEVROHREARPALLTSRLRFIPKPDGLRPIVNMDYVVGAR
                                                an immune
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 20;
                                                                                                                                                                                                                                                     Indels
                                                                                                                                                                                                                       Length
                                                for eliciting
                                                                                                                                                                                                                                                   165;
                                                                                                                                                                                                                        8
                                                                                                                                                                                                                        В
                                                                                                                                                                                                                     %; Score 4515; D
%; Pred. No. 0;
87; Mismatches
                                              relates to a novel method
                  NO 12; 44pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       --
                                                                                                                                                                                                                     tch
al Similarity 76.4%;
880; Conservative 8
                                                                                                                                                                                                                     Query Match
Best Local Similarity
                  a
                                                                                                                                                                                           Sequence 1152 AA
                   SEQ
                                              invention
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             199
                                                                                                                                                                                                                                                                                                                                           61
                                                                                                                                                                                                                                                                                                                                                                     61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           292
                                                                                                                                                                                                                                                                                                                                                                                                   121
                                                                                                                                                                                                                                                                                                                                                                                                                               121
                                                                                                                                                                                                                                                                                                                                                                                                                                                           181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   232
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    352
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             412
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     467
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                527
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        584
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  644
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           704
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       721
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    763
                                                                                                                                                                                                                                                     Matches
    요
                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                  임
                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                          à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                  ð
                                                                                                                                                                                                                                                                                                                                                                                                  δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ð
                                             480
                                                                                                                                                             600
                                                                        502
                                                                                                                                562
                                                                                                                                                                                        622
                                                                                                                                                                                                                       99
                                                                                                                                                                                                                                                  682
                                                                                                                                                                                                                                                                                720
                                                                                                                                                                                                                                                                                                           742
                                                                                                                                                                                                                                                                                                                                          780
                                                                                                                                                                                                                                                                                                                                                                     802
                                                                                                                                                                                                                                                                                                                                                                                                   840
                                                                                                                                                                                                                                                                                                                                                                                                                             862
                                                                                                                                                                                                                                                                                                                                                                                                                                                          900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       922
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Eliciting an immune response in a mammal specific for its own telomerase everse transcriptase (TERT), useful for treating or preventing cancer, comprises administering a composition containing TERT of another mammalian species.
PAAGYCAREKPQGSVAAPEEEDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS
                                                                                                                                                            LAKFLHWLMSVYVVELLRSFFYVTETTFOKNRLFFYRKSVWSKLOSIGIRQHLKRVQLRE
                                                                                                                                                                                 LAKFLHWIMSVYVVELLRSFFYVTETTFQKNRLFFYRKSVWSKLQSIGIRQHLKRVQLRE
                                                                                                                                                                                                                  LSEAEVRQHREARPALLTSRLRFI PKPDGLRPIVNMDYVVGARTFRREKRAERLTSRVKA
                                                                                                                                                                                                                                       LSEAEVROHREARPALLISRLRFIPKPDGLRPIVNMDYVVGARTFRREKRAERLISRVKA
                                                                                                                                                                                                                                                                                                                                                          PODRLTEVIASIIKPONTYCVRRYAVVOKAAHGHVRKAFKSHVSTLTDLOPYMROFVAHL
                                                                                                                                                                                                                                                                                                                                                                                                                 LCSLCYGDMENKLFAGIRRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGCVVNL
                                             PAAGVCAREKPQGSVAAPEEEDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS
                                                                                                   RHNERRFLRNTKKFISLGKHAKLSLQELTWKMSVRDCAWLRRSPGVGCVPAAEHRLREEI
                                                                                                                                                                                                                                                                                                           LFSVLNYERARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDPPPELYFVKVDVTGAYDTI
                                                                                                                                                                                                                                                                                                                                          PODRLTEVIASIIKPONTYCVRRYAVVOKAAHGHVRKAFKSHVSTLTDLOPYMROFVAHL
                                                                                                                                                                                                                                                                                                                                                                                                  QETSPLRDAVVIEQSSSLNEASSGLFDVFLRFMCHHAVRIRGKSYVQCQGIPQGSILSTL
                                                                                                                                                                                                                                                                                                                                                                                                                                                           LCSLCYGDMENKLFAGIRRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGCVVNL
                                                                                                                      RHNERRFLENTKKFI SLGKHAKLSLQELTWKMSVRDCAWLRRSPGVGCVPAAEHRLREEI
                                                                                                                                                                                                                                                                               LFSVLNYERARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDPPPELYFVKVDVTGAYDTI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        telomerase reverse transcriptase; TERT; cytostatic;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     cancer; cytotoxic T cell response.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Wang
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               949
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RKTVVNFPVEDEALGGTAFVQMPAHGL 927
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SEQ ID NO:12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ġ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Σ̈́
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ADG90609 standard; protein; 1152
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Frolkis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    27-JUN-2002; 2002US-0393295P
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               IA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            consensus sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Ferber
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        WPI; 2004-071946/07.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             WO2004002408-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (GERO-) GERON
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Unidentified
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Majumdar A,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              25-MAR-2004
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            08-JAN-2004
                                                                                                   481
                                                                                                                                503
                                                                                                                                                                                                                                                                                                           683
                                                                                                                                                                                                                                                                                                                                                                     743
                                             121
                                                                                                                                                             541
                                                                                                                                                                                        563
                                                                                                                                                                                                                     601
                                                                                                                                                                                                                                                  623
                                                                                                                                                                                                                                                                                661
                                                                                                                                                                                                                                                                                                                                        721
                                                                                                                                                                                                                                                                                                                                                                                                  781
                                                                                                                                                                                                                                                                                                                                                                                                                             803
                                                                                                                                                                                                                                                                                                                                                                                                                                                           841
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       863
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                901
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             923
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RESULT
```

THE STANDARD STANDARD

```
(hrry) variant from the present invention. The present invention also describes the following methods: (A) determining whether a test compound is a modulator of hrry, by detecting the change in hrry recombinant protein or polynucleotide, on administration of the compound; (B) preparation of recombinant telomerase by contacting a protein preparation of the hrry RNA or protein in a sample by binding a relevant probe to the sample and certain the complex formed or in the case of RNA detection, amplifying the presence of complex or amplification or product and correlating the presence of complex or amplification or product with presence of hrry in the sample; and (D) increasing the product with presence of hrry in the sample; and (D) increasing the proliferation of a vertebrate cell by increasing hrry expression; and (E) the use of an agent that causes an increase in cell vertebrate cell corpliferation of create a medicament that inhibits ageing. A protein or preparation of hrry and the polynucleotide encoding hrry can be used in the manufacture of medicaments for inhibiting the effect of ageing or cancer. Inhibitors of telomerase activity can be used to treat conditions that are associated with high telomerase activity. A protein preparation chart are associated with high telomerase activity. A protein preparation
             telomerase reverse transcriptase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SYLPNIVIDALRGSGAWGLLLRRVGDDVLVHLLARCALFVLVAPSCAYQVCGPPLYQLGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              241 GAAPEPERTFVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        RQHHAGPPSTSRPPRPWDTPCPPVYAETKHFLYSSGDKEQLRPSFLLSSLRPSLTGARRL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                VETIFLGSRPWMFGTPRRLPRLPQRYWQMRPLFLELLGNHAQCPYGVLLKTHCPLRAAVT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LAKFLHWLMSVYVVUELLRSFFYVTETTFQKNRLFFYRKSVWSKLQSIGIRQHLKRVQLRE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     LFSVLNYERARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDPPPELYFVKVDVTGAYDTI
                                                                                                                                                                                                                                                                                                                                                                                                    MPRAPRCRAVRSLIRSHYREVLPLATFVRRIGPQGWRLVQRGDPAAFRALVAQCLVCVPW
                                                                                                                                                                                                                                                                                                                                                                                                                                                             DARPPPAAPSFRQVSCLKELVARVLQRLCERGAKNVLAFGFALLDGARGGPPEAFTTSVR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SYLPNTVTDALRGSGAWGLLLRRVGDDVLVHLLARCALFVLVAPSCAYOVCGPPLYOLGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ATQARPPHASGPRRRLGCERAWNHSVREAGVPLGLPAPGARRRGGSASRSLPLPKRPRR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ROHHAGPPSTSRPPRPWDTPCPPVYAETKHFLYSSGDKEQLRPSFLLSSLRPSLTGARRL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        LAKFLHWLMSVYVVELLRSFFYVTETTFOKNRLFFYRKSVWSKLOSIGIRQHLKRVQLRE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      LSEAEVROHREARPALLTSRLRFIPKPDGLRPIVNMDYVVGARTFRREKRAERLTSRVKA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         LSEAEVRQHREARPALLISRIRFIPKPDGIRPIVNMDYVVGARTFRREKRABRLISRVKA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             VETIFLGSRPWMPGTPRRLPRLPQRYWQMRPLFLELLGNHAQCPYGVLLKTHCPLRAAVT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PAAGVCAREKPOGSVAAPEEEDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 RHNERRFLRNTKKFISLGKHAKLSLOELTWKMSVRDCAWLRRSPGVGCVPAAEHRLREEI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LFSVLNYERARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDPPPELYFVKVDVTGAYDTI
                                                                                                                                                                                                                                                                                                                                                                        Gaps
                                                                                                                                                                                                                                                                                                                                                                        .
0
                                                                                                                                                                                                                                                                                                                                            Length 807;
                                                                                                                                                                                                                                                                                                                                                                        0; Indels
                                                                                                                                                                                                                                                                                                                                          DB 2;
                                                                                                                                                                                                                                                                                                                                         68.0%; Score 4052; D
100.0%; Pred. No. 0;
ive 0; Mismatches
The present sequence represents a human (hTRT) variant from the
                                                                                                                                                                                                                                                                                                                                      Query Match 68.0
Best Local Similarity 100.
Matches 763; Conservative
                                                                                                                                                                                                                                                                                                           Sequence 807 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                             61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               661
          ò
                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                          ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    임
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                           1000
                                                                                                                                                                                        1020
                                                                                                                                                                                                                    1060
                                                                                                                                                                                                                                                  1080
                                                                                                                                                                                                                                                                               1120
                                                                                                                                                                                                                                                                                            781 VSTLSDLQPYMGQFLKHLQDSDASALRNSVVIEQSISLNEASSSLFDFFLRFLRHSVVKI 840
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Human; telomerase reverse transcriptase; hTRT; TRT; diagnosis; prognosis; cell proliferation; cancer; ageing; ribonucleoprotein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                cell
                                   RGKSYVQCQGIPQGSILSTLLCSLCYGDMENKLFAGIRRDGLLLRLVDDFLLVTPHLTHA
                                                   KTFLRTLVRGVPEYGCVVNLRKTVVNFPVEDEALGGTAFVQMPAHGLFPWCGLLLDTRTL
                                                                                                            EVQSDYSSYARTSIRASLTFNRGFKAGRNMRRKLFGVLRLKCHSLFLDLQVNSLQTVCTN
                                                                                                                                                                       IYKILLLQAYRFHACVLQLPFHQQVWKNPTFFLRVISDTASLCYSILKAKNAGMSLGAKG
                                                                                                                                                                                                                                  1021 IYKIFLLQAYRFHACVIQLPFDQRVRKNPTFFLGIISSQASCCYAILKVKNAGMTLKAKG
                                                                                                                                                                                                                                                                           AAGPLPSEAVQWLCHQAFLLKLTRHRVTYVPLLGSLRTAQTQLSRKLPGTTLTALEAAAN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ë
B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Pure and recombinant human Telomerase Reverse Transcriptase and its variants - are useful in the diagnosis, prognosis and treatment of c proliferation conditions especially cancer and ageing.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Harley
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Morin GB,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Human telomerase reverse transcriptase Delta182 variant
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Chapman KB,
                                                                                                                                                                                                                                                                                                                                                                                                                                            Ą.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Disclosure; Fig 20; 387pp; English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Lingner J, Nakamura T,
                                                                                                                                                                                                                                                                                                                                                                                                                                         AAW46997 standard; protein; 807
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       96US-00724643.
97US-00844119.
97US-00846017.
97US-00854050.
97US-0091312.
97US-00912951.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TECHNOLOGY CORP.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              97GB-00020890
                                                                                                                                                                                                                                                                                                                                                                  PALSTDFOTILD 1152
                                                                                                                                                                                                                                                                                                                                   PALPSDFKTILD 1132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    WPI; 1998-171633/16.
N-PSDB; AAV22382.
                                                                                                                                                                                                                                                                                                                                                       ••
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GERON
UNIV T
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           01-OCT-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       01-OCT-1996;
18-APR-1997;
25-APR-1997;
06-MAY-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                14-AUG-1997;
14-AUG-1997;
14-AUG-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    13-AUG-1998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GB2317891-A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 08-APR-1998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     09-MAY-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Ĕ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Synthetic.
                                                                                                                                                                                                                                                                                                                                                                  1141
                                   821
                                                                                                                                                                                    196
                                                                                                                                                                                                                 1001
                                                                                                                                                                                                                                                                                                        1081
                                                                                                                                                                                                                                                                                                                                    1121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AAW46997;
                                                                                                                                                        941
                                                                                                                                                                                                                                                                            1061
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ŦŖ,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (GERO-)
(UYTE-)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Andrews
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Cech
                                                                                                                                                                                                                                                                                                                                                                                                                             AAW46997
                                                                                                                                                                                  අ
                                                                                                                                                                                                                                       임
                                  ò
                                                              g
                                                                                                                       셤
                                                                                                                                                     ð
                                                                                                                                                                                                                                                                        8
                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                   ð
                                                                                           ò
                                                                                                                                                                                                                à
                                                                                                                                                                                                                                                                                                                                                             원
```

300 360 360 420 420 480 540 540 9 900 9 9 720

120 120 180 180 240 240

```
240
                                                                                                                                                               300
                                                                                                                                                                                        300
                                                                                                                                                                                                                                                                                                                                                                                                                                   9
                                                                                                                                                                                                                                                                                                                                                                                                                                                           600
                                                                                                                                                                                                                  360
                                                                                                                                                                                                                                 420
                                                                                                                                                                                                                                                                                                                         480
                                                                                                                                                                                                                                                                                                                                                  480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          LESVLNYERARREGLEGASVLGLDDIHRAWRTFVLRVRAQDPPPELYFVKVDVTGAYDTI 720
                                                                                                                                                                                                                                                                      VETIFLGSRPWMPGTPRRLPRLPQRYWQMRPLFLELLGNHAQCPYGVLLKTHCPLRAAVT 420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Telomerase; human; cancer; diagnosis; melanoma; skin cancer; leukaemia; neuroblastoma; breast carcinoma; arctinoma; lymphoma; osteosarcoma; smooth muscle cell hyperplasia; stem cell proliferation; Wilm's tumour; stem cell differentiation; organ regeneration; organ differentiation.
                                                                                                                       GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG
 SYLPNTVTDALRGSGAWGLLLRRVGDDVLVHLLARCALFVLVAPSCAYQVCGPPLYQLGA
                                                                                                        ATQARPPHASGPRRRIGCERAWNHSVREAGVPLGLPAPGARRRGGSASRSLPLPKRPRR
                                                                                                                                                               GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG
                                                                                                                                                                                                                                                                                                                                          PAAGVCAREKPOGSVAAPEEEDTDPRRIVQLIRQHSSPWQVYGFVRACLRRIVPPGLWGS
                                                                                                                                                                                                                                                                                                                                                                             LAKFLHWLMSVYVVELLRSFFYVTETTFQKNRLFFYRKSVWSKLQSIGIRQHLKRVQLRE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      LSEAEVROHREARPALLISRLRFIPKPDGLRPIVNMDYVVGARTFRREKRAERLTSRVKA
                                                                                                                                                                                                                    RQHHAGPPSTSRPPRPWDTPCPPVYAETKHFLYSSGDKEQLRPSFLLSSLRPSLTGARRL
                                                                                                                                                                                                                                                                                     VETIFIGSRPWMPGTPRRLPRLPQRYWQMRPLFLELLGNHAQCPYGVLLKTHCPLRAAVT
                                                                                                                                                                                                                                                                                                                           PAAGVCAREKPQGSVAAPEEEDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS
                                                                                                                                                                                                                                                                                                                                                                                                                                   LAKFLHWLMSVYVVELLRSFFYVTETTFOKNRLFFYRKSVWSKLOSIGIROHLKRVOLRE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       LSEAEVROHREARPALLTSRLRFIPKPDGLRPIVNMDYVVGARTFRREKRAERLTSRVKA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      LFSVLNYERARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDPPPBLYFVKVDVTGAYDTI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Truncated telomerase (ver. 2) protein sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ġ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AAY00646 standard; protein; 807
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   98WO-US013835.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               26-JUL-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           WO9901560-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                01-JUL-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         14-JAN-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Synthetic.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AAY00646;
                          61
                                                                              121
                                                                                                          181
                                                                                                                                    181
                                                                                                                                                               241
                                                                                                                                                                                         241
                                                                                                                                                                                                                                           301
                                                                                                                                                                                                                                                                       361
                                                                                                                                                                                                                                                                                                                                                  421
                                                                                                                                                                                                                                                                                                                                                                                                       481
                                                                                                                                                                                                                                                                                                                                                                                                                                                            541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         721
  61
                                                                                                                                                                                                                  301
                                                                                                                                                                                                                                                                                                361
                                                                                                                                                                                                                                                                                                                           421
                                                                                                                                                                                                                                                                                                                                                                             481
                                                                                                                                                                                                                                                                                                                                                                                                                                   541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                721
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Homo
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AAY00646
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RESULT
  8 6
                                                                       g
                                                                                                                                 셤
                                                                                                                                                                                 g
                                                                                                                                                                                                                                      요
                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                             요
                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                     원
                                                                                                                                                                                                                                                                                                                                                                                                                                                     a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        8
                                                                                                        ò
                                                                                                                                                            ò
                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                         ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                  ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               This sequence is a truncated human telomerase of the invention. Primers that amplify the telomerase coding sequence can be used in a method for diagnosing cancer in a patient. The telomerase can be used in a method for diagnosis and drug screening. Inhibitors of telomerase activity can be used to treat cancers such as melanomas, other skin cancers, neuroblastomas, breast carcinomas, oclon carcinomas, leukaemias, lymphomas, osteosarcomas or smooth muscle cell hyperplasias or skin growths. Enhancers of telomerase may be used to stimulate stem cell proliferation and differentiation (expansion of hematopoietic stem cells could be administered in the bone marrow transplant context). As well, many tissues have stem cells. Proliferation of these cells may be useful in wound healing, hair growth, treatment of disease such as Wilm's tumour, organ regeneration or differentiation after injury or diseases, nerve cell or brain cell growth following injury
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ö
                                                                                                                                                                                                                 neuroblastoma; breast carcinoma; colon carcinoma; lymphoma; osteosarcoma; smooth muscle cell hyperplasia; stem cell proliferation; Wilm's tumour; stem cell differentiation; organ regeneration; organ differentiation.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    New isolated vertebrate telomerase genes - used to develop products for treating cancers or for organ regeneration, nerve cell or brain cell growth following injury or bone marrow transplantation.
                                                                                                                                                                                                    Telomerase; human; cancer; diagnosis; melanoma; skin cancer; leukaemia;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MPRAPRCRAVRSLLRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MPRAPRCRAVRSLLRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ,
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Length 807;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Indels
           N-terminal truncated telomerase protein sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           .;
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Score 4052; DE
Pred. No. 0;
0; Mismatches
                                                                                             Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Claim 4; Fig 11d-e; 134pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    68.0%; Scor
100.0%; Pred
0; M
                                                                                          AAY00637 standard; protein; 807
                                                                                                                                                                                                                                                                                                                                                                                     97US-0051410P.
97US-0053118P.
97US-0053329P.
97US-0054642P.
97US-0058287P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        BIOSYSTEMS LLC
                                                                                                                                                                                                                                                                                                                                                                98WO-US013835
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Kilian A, Bowtell D;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             WPI; 1999-106060/09.
N-PSDB; AAX18265.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence 807 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (CAMB-) CAMBIA
                                                                                                                                                                                                                                                                      sapiens
                                                                                                                                                                                                                                                                                                             WO9901560-A1
                                                                                                                                                                                                                                                                                                                                                                                                      21-JUL-1997;
21-JUL-1997;
04-AUG-1997;
                                                                                                                                                                                                                                                                                                                                                               01-JUL-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                               09-SEP-1997;
                                                                                                                                                                                                                                                                                                                                                                                          01-JUL-1997;
                                                                                                                                               26-JUL-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          763;
                                                                                                                                                                                                                                                                                                                                      14-JAN-1999
                                                                                                                                                                                                                                                                                    Synthetic.
                                                                                                                       AAY00637;
                         721
721
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Best Loca
Matches
                                                                                                                                                                                                                                                                      Ношо
                                                                                                        ઠે
                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              요
```

```
9
                                                                                                                                                                                                                             99
                                                                                                                                      900
                                                                                                                                                                                                                                                                                                This invention relates to a novel composition for inducing a reversible state of a continual growth in cultured cells and comprises at least one compound comprising a cyclin dependent kinase (cdk), cdk2 or cdk6 protein having an activating mutation. Growth and division of living cells involve a regular series of events and processes that comprise the coll cycle. Cyclin dependent kinases cdk2, cdk4 and cdk6 are involved in the control of G1, the point at which cells irrevocably commit to DNA synthesis and thus enter the cell cycle. The invention is useful in reversibly inducing continual growth in normal cells and may allow the screening of cancer-causing agents with the continual growth-induced cells. The present sequence is that of the golden hamster TERT protein, the catalytic subunit of telomerase, related to the invention. Note: Due to an error in the specification or sequence listing, the Seq ID numbers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A composition for reversibly inducing continual growth in normal cells comprises a cyclin dependent kinase protein (e.g. cdk4, cdk2 or cdk6) or its active fragment, derivative, homolog or analog, having an activating
                                                                                                                      LAKFLHWLMSVYVVELLRSFFYVTETTFQKNRLFFYRKSVWSKLQSIGIRQHLKRVQLRE
                                                                                                                                                                                LSEAEVROHREARPALLTSRLRFI PKPDGLRPIVNMDYVVGARTFRREKRAERLTSRVKA
                                                                                                                                                                                                           RHNERRFLRNTKKFISLGKHAKLSLQELTWKMSVRDCAWLRRSPGVGCVPAAEHRLREEI
                                     481 RHNERRFLRNTKKFISLGKHAKLSLQELTWKMSVRDCAWLRRSPGVGCVPAAEHRLREEI
                                                                                                                                                                                                                                                                     LFSVLNYERARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDPPPELYFVKVDVTGAYDTI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              continual growth; cultured cell; cyclin dependent kinase; cdk4; cdk2; cdk6; activating mitation; cell growth; cell division; cell cycle; cancer-causing agent; continual growth-induced cell; enzyme; TERT; telomerase; Golden hamster.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Golden hamster TERT protein related to continual cell growth.
                                                                                                                                                                                                                                                                                                                                                          763
                                                                                                                                                                                                                                                                                                                                                                                721 PQDRLTEVIASIIKPQNTYCVRRYAVVQKAAHGHVRKAFKSHV 763
                                                                                                                                                                                                                                                                                                                                                          PQDRLTEVIASIIKPQNTYCVRRYAVVQKAAHGHVRKAFKSHV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Disclosure; Page 119-121; 77pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ź
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ADD21416 standard; protein; 1128
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       15-NOV-2002; 2002WO-US036729.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 15-NOV-2001; 2001US-0334760P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              15-JAN-2004 (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Mesocricetus auratus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Rane SG,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          WPI; 2003-449813/42.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       (UTEM ) UNIV TEMPLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  WO2003044169-A2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          30-MAY-2003.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PE,
        481
                                                                                             541
                                                                                                                                      541
                                                                                                                                                                                601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ADD21416;
                                                                                                                                                                                                                           601
                                                                                                                                                                                                                                                                     661
                                                                                                                                                                                                                                                                                                                                                        721
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 mutation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Reddy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RESULT 52
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                               셤
                                                                                                                                                                                ð
                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                       g
        ठ
                                                                                           8
                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                         This sequence is a truncated human telomerase of the invention. Primers that amplify the telomerase coding sequence can be used in a method for diagnosing cancer in a patient. The telomerase can be used for detection, diagnosing cancer in a patient. The telomerase can be used for detection, diagnosis and drug screening. Inhibitors of telomerase activity can be used to treat cancers such as melanomas, other skin cancers, neuroblastomas, breast carcinomas, oolon carcinomas, leukaemias, lymphomas, osteosarcomas or smooth muscle cell hyperplasias or skin growths. Enhancers of telomerase may be used to stimulate stem cells could be administered in the bone marrow transplant context). As well, many tissues have stem cells. Proliferation of these cells may be useful in wound healing, hair growth, treatment of disease such as Wilm's tumour, organ regeneration or differentiation after injury or diseases, curve cell or brain cell growth following injury. Note: The N-terminus of this sequence can be replaced by the sequences shown in AAY00656-Y00658
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           9
                                                                                                                                                                                                                                                                                  New isolated vertebrate telomerase genes - used to develop products for treating cancers or for organ regeneration, nerve cell or brain cell
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SYLPNTVTDALRGSGAWGLLLRRVGDDVLVHLLARCALFVLVAPSCAYQVCGPPLYQLGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1 MPRAPRCRAVRSLLRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DARPPPAAPSFRQVSCLKELVARVLQRLCERGAKNVLAFGFALLDGARGGPPEAFTTSVR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SYLPNTVTDALRGSGAWGLLIRRVGDDVLVHLIARCALFVLVAPSCAYQVCGPPLYQLGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ATQARPPHASGPRRRLGCERAWNHSVREAGVPLGLPAPGARRRGGSASRSLPLPKRPRR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DARPPPAAPSFRQVSCLKELVARVLQRLCERGAKNVLAFGFALLDGARGGPFAFTTSVR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ATQARPPHASGPRRRLGCERAWNHSVREAGVPLGLPAPGARRRGGSASRSLPLPKRPRR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ROHHAGPPSTSRPPRPWDTPCPPVYAETKHFLYSSGDKEQLRPSFLLSSLRPSLTGARRL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 VETIFLGSR PWMPGTPRRLPRLPQRYWQMRPLFLELLGNHAQCPYGVLLKTHCPLRAAVT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PAAGVCAREKPQGSVAAPEEEDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     68.0%; Score 4052; DB 2; Length 807; 100.0%; Pred. No. 0; ive 0; Mismatches 0; Indels (
                                                                                                                                                                                                                                                                                                                                 or bone marrow transplantation.
                                                                                                                                                                                                                                                                                                                                                                     Claim 4; Fig 11x-y; 134pp; English.
97US-0051410P.
97US-0053018P.
97US-0053329P.
97US-0054642P.
97US-0058287P.
                                                                                                                               (CAMB-) CAMBIA BIOSYSTEMS LLC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
Best Local Similarity 100.
Matches 763; Conservative
                                                                                                                                                                                                                                                                                                         treating cancers or for growth following injury
                                                                                                                                                                       Bowtell D;
                                                                                                                                                                                                                      1999-106060/09.
                                                                                                                                                                                                                  WPI; 1999-106060/
N-PSDB; AAX18274.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sequence 807 AA;
                                                                04-AUG-1997;
09-SEP-1997;
                      21-JUL-1997
21-JUL-1997
                                                                                                                                                                         Kilian A,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   421
```

셤 ठ g

ò

유

ò

요

ò

g

8

g

ò

ò 원 à

Jan

Thu

```
CGLLLDTRTLEVOSDYSSYARTSIRASLTFNRGFKAGRNMRRKLFGVLRLKCHSLFLDLO
                                   VNSLQTVCTNIYKILLLQAYRFHACVLQLPFHQQVWKNPTFFLRVISDTASLCYSILKAK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Ŋ,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Wang
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Claim 10; SEQ ID NO 6; 44pp; English.
                                                                                                                                                                                                       TLTALEAAANPALPSDFKTILD 1132
                                                                                                                                                                                                                                                                                                                  Z
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ΣÌ
                                                                                                                                                                                                                                                                                                                   standard; protein; 1128
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Frolkis
                                                                                                                                                                                                                     |: || ||:||| TMAILETAADPALSTDFQTILD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     24-JUN-2003; 2003WO-US019844.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  27-JUN-2002; 2002US-0393295P.
                                                                                                                                                                                                                                                                                                                                                                                   entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Majumdar A, Ferber IA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Mesocricetus auratus.
                                                                                                                                                                                                                                                                                                                                                                                                                SEQ ID
                                                                                                                                                                                                                                                                                                                                                                               (first
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             WPI; 2004-071946/07
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (GERO-) GERON CORP.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sequence 1128 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             N-PSDB; ADG90602
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         WO2004002408-A2.
                                                                                                                                                                                                                                                                                                                                                                                                                Hamster TERT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
Best Local Simi
Matches 736; (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      08-JAN-2004.
                                                                                                                                                                                                                                                                                                                                                                                 25-MAR-2004
                                                                                                                                           1051
                                                                                                                                                                          1047
                                                                                                                                                                                                                                    1107
                                                                                                                                                                                                                                                                                                                                                  ADG90603;
                   331
                                                927
                                                                             991
                                                                                                            987
                                                                                                                                                                                                       1111
                                                                                                                                                                                                                                                                                                                  ADG90603
                                                                                                                                                                                                                                                                                                     ADG9060
                                                                                                                                                                                                                                                                                     RESULT
                                      a
                                                                             8 8
                                                                                                                                 ò
                                                                                                                                                                     셤
                                                                                                                                                                                                                             유
                                                                                                                                                                                                                                                                                                                     8
                                                                                                                                                                                                     8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ठ
    sequence
s to which
                                                                                                                           16;
                                                                                                                                                                                                                    120
                                                                                                                                                                                                                                                   120
                                                                                                                                                                                                                                                                                 180
                                                                                                                                                                                                                                                                                                                                                 231
                                                                                                                                                                                                                                                                                                                                                                               240
                                                                                                                                                                                                                                                                                                                                                                                                            287
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               513
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                746
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                810
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            870
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          930
                                                                                                                                                                                                                                                                                                                  180
                                                                                                                                                                                                                                                                                                                                                                                                                                           291
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          334
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       341
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      393
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  401
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  453
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 447
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                573
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          567
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         633
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      627
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     693
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    989
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   VLRVRAQDPPPELYFVKVDVTGAYDTIPQDRLTEVIASIIK-PQNTYCVRRYAVVQKAAH 752
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             908
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       926
                                                                                                                                                         9
                                                                                                                                                                                       9
                                                                                                                                                                                                                                                                                 SYLPNIVIDALRGSGAWGLLLRRVGDDVLVHLLARCALFVLVAPSCAYQVCGPPLYQLGA
                                                                                                                                                                                                                                      LPLPKRPRRGAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPAR----PAEEATSLEG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DARPPPAAPSFROVSCLKELVARVLORLCERGAKNVLAFGFALLDGARGGPPEAFTTSVR
                                                                                                                                                                                                                                                                                                                                                 -----CERAWNHSVREAGVPLGLPAPGARRGGSASRS
                                                                                                                                                                                                                                                                                                                                                                    : | : | : | : | : | : | : | : | : | | : | | : | | | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : 
                                                                                                                                                                                                                                                                                                                                                                                                                                ALSGTRHSHPSVGRQ----HHAGPPSTS-RPP-----RPWDTPCPPVYAETKHFLYS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            QHSSPWQVYGFVRACLRRLVPPGLWGSRHNERRFLRNTXKFISLGKHAKLSLQELTWKMS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             VNMDYVVGARTFRREKRAERLISRVKALFSVLNYERARRPGLIGASVLGLDDIHRAWRIF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GHVRKAPKSHVSTLTDLQPYMRQFVAHLQ--ETSPLRDAVVIEQSSSLNEASSGLFDVFL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GQIHKSFRRQVSTLSDLQPHMGQFLKHLQDSDTSALRNSVVIEGSLSLNEASSSLFDFFL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            REMCHHAVRIRGKSYVQCQGIPQGSILSTLLCSLCYGDMENKLFAGIRRDGLLLRLVDDF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              LLVTPHLTHAKFERTLVRGVDEXGCVVNLRKTVVNFPVEDEALGGTAFVQMPAHGLFPW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1 MPRAPRCRAVRSLLRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LELLGNHAQCPYGVLLKTHCPLRAAVTPAAGVCAREKPQGSVAAPEEEDTDPRRLVQLLR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          VRDCAWLRRSPGVGCVPAAEHRLREEILAKFLHWLMSVYVVELLRSFFYVTETTPQKNRL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       FFYRKSVWSKLQSIGIRQHLKRVQLRELSEAEVRQHREARPALLTSRLRFIPKPDGLRPI
                                                                                                                           Gaps
given in the disclosure do not correspond to those given in the sequ
listing. It is therefore unclear which Seq ID number corresponds to
sequence and exactly which sequence is being claimed.
                                                                                                                           64;
                                                                                            Length 1128;
                                                                                          Query Match
60.9%; Score 3628; DB 7; Length 1
Best Local Similarity 63.3%; Pred. No. 9.8e-296;
Matches 736; Conservative 124; Mismatches 238; Indels
                                                                                                                                                                                                                                                                                                                                                 181 ATQARPP-PHASGPRRRLG-
                                                               Sequence 1128 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       292
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  342
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              454
                                                                                                                                                                                                                    61
                                                                                                                                                                                                                                                                                 121
                                                                                                                                                                                                                                                                                                                121
                                                                                                                                                                                                                                                                                                                                                                                                              232
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        288
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                394
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 402
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             448
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           514
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          508
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       574
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      568
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     634
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   694
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                687
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                753
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             747
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            811
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           807
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          871
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     867
 88888
                                                                                                                                                         ઠ
                                                                                                                                                                                  셤
                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                              원
                                                                                                                                                                                                                                                                                ઠ
                                                                                                                                                                                                                                                                                                          ద
                                                                                                                                                                                                                                                                                                                                       8
                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                           ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ď
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ઠ
```

```
16;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       The invention relates to a novel method for eliciting an immune response in a mammalian subject that is specific for its own telomerase reverse transcriptase (TERT), comprising administering an immunogenic composition containing a protein with at least 20 consecutive amino acids of TERT of another mammalian species, or a nucleic acid encoding the protein. A composition of the invention has cytostatic, and immunostimulant activity. The protein or the nucleic acid encoding the protein is useful in the manufacture of a medicament for the treatment of cancer in a human
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Eliciting an immune response in a mammal specific for its own telomerase everse transcriptase (TERT), useful for treating or preventing cancer, comprises administering a composition containing TERT of another mammalian species.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              MPRAPRCRAVRSLLRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      64;
hamster; immune response; telomerase reverse transcriptase; TER
cytostatic; immunostimulant; cancer; cytotoxic T cell response.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Length 1128;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             eliciting a cytotoxic T cell response in a human
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      60.9%; Score 3628; DB 8;
63.3%; Pred. No. 9.8e-296;
iive 124; Mismatches 238;
```

셤

ઠે

g

ò

셤

ò

g

8 g ò g ò 8 à 임 ð 요 ò 엄 ò a ò d ò 윉 8 g ò g

8

```
The invention relates to a mouse telomerase reverse transcriptuse (WTERT) estayme. Compositions containing MTERT can be used in telomere length assays. Isolated MTERT is useful as an immunogen for the production of monoclonal or polyclonal antibodies. The method is useful for assessing the degree of purification and identification of new MTERT species, such as an MTERT allele, homolog or isoform, or to screen for modulators (antagonists and agonists) of telomerase-mediated DNA replication. Antagonists and agonists of MTERT can be used to modify the activity of other telomerase enzymes such as human TERT (HTERT). The present sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         181 ATQARPPHAS-GPRRRLG-----CERAWNHSVREAGVPLGLPAPGARRRGGSASRS 231
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1 MPRAPRCRAVRSLLRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SYLPNTVIDALRGSGAWGLLLRRVGDDVLVHLLARCALFVLVAPSCAYQVCGPPLYQLGA
                                                                                                                                                                                                                         transcriptase; TERT; mouse; telomere length assay; telomerase-mediated DNA replication.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DARPPPAAPSFROVSCLKELVARVLORLCERGAKNVLAFGFALLDGARGGPPEAFTTSVR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Mouse telomerase reverse transcriptase (MTERT) enzyme proteins and nucleic acids.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Indels 52;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Length 1122;
                                                                                                                                                                                              Murine telomerase reverse transcriptase (mTBRT) enzyme
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match 58.8%; Score 3505; DB 2; Best Local Similarity 62.4%; Pred. No. 2.2e-285; Matches 719; Conservative 122; Mismatches 260;
                                                                                                                                                                                                                                                                                                                                                                                                                                                           ä
                                                                                                                                                                                                                                                                                                                                                                                                                                                          Greenberg
                                                                                                                                                                                                                                                                                                                                                                                                                                UNIV YESHIVA EINSTEIN COLLEGE.
                                              1128
                                                                                                                Ā
                                                                                                                                                                                                                                                                                                                                                                                                                                                          ъ,
                                                                                                                standard; protein; 1122
                                |: || ||:||| :||:||||
TMAILETAADPALSTDFOTILD
                   TLTALEAAANPALPSDFKTILD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Claim 8; Fig 2; 135pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                          Depinho
                                                                                                                                                                                                                                                                                                                                                98WO-US025211
                                                                                                                                                                                                                                                                                                                                                                         97US-00979742.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    represents a mTERT enzyme
                                                                                                                                                                                                                                                                                                                                                                                                                                                          ď,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  WPI; 1999-347722/29.
N-PSDB; AAX80994.
                                                                                                                                                                                                                          reverse
enzyme;
                                                                                                                                                                                                                                                                                                                                                                                                                  CORP.
                                                                                                                                                                                                                                                                                                                                                                                                                                                       Morin GB, Allsopp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Sequence 1122 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                  (GERO-) GERON
                                                                                                                                                                                                                                                                                         WO9927113-A1
                                                                                                                                                                                                                                                                                                                                               25-NOV-1998;
                                                                                                                                                                                                                                                                                                                                                                         26-NOV-1997;
                                                                                                                                                                                                                                                                                                                                                                                       16-MAR-1998;
                                                                                                                                                                  13-SEP-1999
                                                                                                                                                                                                                                                                                                                    03-JUN-1999
                                                                                                                                                                                                                        Telomerase
immunogen;
                                          1107
                  1111
                                                                                                              AAY26579
                                                                                                                                        AAY26579;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           61
                                                                                                                                                                                                                                                                                                                                                                                                                               (YESH )
                                                                                                   AAY2657
                                                                                     RESULT
                                                                                                                          ద
                  ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NAGMSLGAKGAAGPLPSEAVOWLCHQAFLLKITRHRVTYVPLLGSLRTAQTQLSRKLPGT 1110
                                                                                   180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       120
                                                       120
                                                                                                            180
                                                                                                                                       231
                                                                                                                                                                  240
                                                                                                                                                                                           287
                                                                                                                                                                                                                      291
                                                                                                                                                                                                                                                 334
                                                                                                                                                                                                                                                                           341
                                                                                                                                                                                                                                                                                                      393
                                                                                                                                                                                                                                                                                                                              401
                                                                                                                                                                                                                                                                                                                                                          453
                                                                                                                                                                                                                                                                                                                                                                                    447
                                                                                                                                                                                                                                                                                                                                                                                                                513
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    573
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               986
                                                                                                                                                                                                                                                                                                                                                                                                                                          507
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             567
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          633
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  627
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             693
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        989
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             VLRVRAQDPPPELYFVKVDVTGAYDTIPQDRLTEVIASIIK-PQNTYCVRRYAVVQKAAH 752
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           746
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      810
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 806
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            870
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 930
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          926
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       990
                                                                                             MPRAPRCRAVRALLRSQYRQVWPLATFVRRLGPEGRQLVQPGDPKVFRTLVARCLVCVPW
                         DARPPPAAPSFROVSCLXELVARVLORLCERGAKNVLAFGFALLDGARGGPPEAFTTSVR
                                          SYLPNTVTDALRGSGAWGLLLRRVGDDVLVHLLARCALPVLVAPSCAYQVCGPPLYQLGA
                                                                                                                                  181 ATQARPP-PHASGPRRRIG------CERAWNHSVREAGVPLGLPAPGARRRGGSASRS
                                                                                                                                                            181 TAETWPSVSRIYRPTRPVGRNFTHLGSTHRVRNSSHQEAWKPPPLPSREAKRSLSITNRS
                                                                                                                                                                                       LPLPKRPRRGAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPAR----PAEEATSLEG
                                                                                                                                                                                                                  241 VPPSKKARCDLAPRLEKGPYROA-----VPTPSDKTW-VPNPAKSHAVPISRTTK-ED
                                                                                                                                                                                                                                             288 ALSGTRHSHPSVGRQ----HHAGPPSTS-RPP-----RPWDTPCPPVYAETKHPLYS
                                                                                                                                                                                                                                                              | | : | : | : | : | | : | | EXSGVK--APGLSRSGSVCYKHKPSSTSLQSPLCQNAFQLRP------YTETKRFLYS
                                                                                                                                                                                                                                                                                                                 -SGDKEQLRPSFILSSIRPSLTGARRIVETIFIGSRPWMPGTPRRLPRLPQRYWQMRPLF
                                                                                                                                                                                                                                                                                                                                                      LELLGNHAQCPYGVLLKTHCPLRAAVTPAAGVCAREKPQGSVAAPEEEDTDPRRLVQLLR
                                                                                                                                                                                                                                                                                                                                                                                                            QHSSPWQVYGFVRACLRRLVPPGLWGSRHNERRFLRNTKKFISLGKHAKLSLQELTWKMS
                                                                                                                                                                                                                                                                                                                                                                                                                          VRDCAWLRRSPGVGCVPAAEHRLREEILAKFLHWLMSVYVVBLLRSFFYVTETTFQXNRL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GHVRKAFKSHVSTLTDLQPYMRQFVAHLQ--ETSPLRDAVVIEQSSSLNEASSGLFDVFL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RFWCHHAVRIRGKSYVQCQGIPQGSILSTLLCSLCYGDMENKLFAGIRRDGLLLRLVDDF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CGLLLDTQTLEVLCDYTGYARTSIKASLTFQRTFKAGRNMRQKLLAVLRLKCHSLFLDLQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                VNMDYVVGARTFRREKRAERLTSRVKALFSVLNYERARRPGLLGASVLGLDDIHRAWRTF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CGLLLDTRTLEVQSDYSSYARTSIRASLTFNRGFKAGRNMRRKLFGVLRLKCHSLFLDLQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       UNSLQTVCTNIYKILLLQAYRFHACVLQLPFHQQVWKNPTFFLRVISDTASLCYSILKAK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     FFYRKSVWSKLOSIGIRQHLKRVQLRELSEAEVRQHREARPALLTSRLRFIPKPDGLRPI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              LLVTPHLTHAKTFLRTLVRGVPEYGCVVNLRKTVVNFPVEDEALGGTAFVQMPAHGLFPW
                                                                                                         121
                           61
                                                    61
                                                                               121
                                                                                                                                                                                        232
                                                                                                                                                                                                                                                                                                  335
                                                                                                                                                                                                                                                                                                                                                                                402
                                                                                                                                                                                                                                                                                                                                                                                                                                       448
                                                                                                                                                                                                                                                                                                                                                        394
                                                                                                                                                                                                                                                                                                                                                                                                            454
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          508
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     574
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                568
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         634
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    628
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               694
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        687
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             747
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 807
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1051
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   753
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            871
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       867
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  931
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            927
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       991
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1047
```

120 180 180

120

셤 ò

à g ò

9 9

Gapв

(first

SEQ ID

```
mouse; immune response; telomerase reverse transcriptase; TERT; cytostatic; immunostimulant; cancer; cytotoxic T cell response.
                                                                                                                   24-JUN-2003; 2003WO-US019844.
                                                                                                                                                                   dajumdar A, Ferber
                                                                                                                                                                                   2004-071946/07
                                                                                                                                                  (GERO-) GERON CORP.
                                                                                                                                                                                           N-PSDB, ADG90600
                                                                                  WO2004002408-A2
                                                                                                                                  27-JUN-2002;
                          Murine TERT
          25-MAR-2004
                                                                                                   08-JAN-2004
                                                                   Mus
  g
                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ద
                                                                                                                                                                                                                                                                                                                                                                                                      ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                             NIYKILLLQAYRFHACVLQLPFHQQVWKNPTFFLRVISDTASLCYSILKAKNAGMSLGAK 1059
TIDIMPSVSASYRPTRPVGRNFTNLRFLQQIKSSSRQEAPKPLALPSRGTKRHLSLTSTS 240
                         286
                                                          345
                                                                         350
                                                                                          405
                                                                                                          410
                                                                                                                          462
                                                                                                                                         452
                                                                                                                                                          522
                                                                                                                                                                         512
                                                                                                                                                                                                                           642
                                                                                                                                                                                                                                           632
                                                                                                                                                                                                                                                                                                                             819
                                                                                                                                                                                                                                                                                                                                                            879
                                                                                                                                                                                                                                                                                                                                                                                            939
                                                                                                                                                                                                                                                                                                                                                                                                             932
                                                                                                                                                                                                                                                                                                                                                                                                                             666
                                                                                                                                                                                           582
                                                                                                                                                                                                           572
                                                                                                                                                                                                                                                           702
                                                                                                                                                                                                                                                                   761
                                                                                                                                                                                                                                                                                                            752
                                                                                                                                                                                                                                                                                                                                            812
                                     -----HRQVLPTPSGKSW-VP&PARSPEVPTAEKDLSSK
                                                                                                                                                                                                                                                                                                    IRGKSYVQCQGIPQGSILSTLLCSLCYGDMENKLFAGIRRDGLLLRLVDDFLLVTPHLTH
                         LPLPKRPRRGAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPAR-----PAEEATSLE
                                                                                                                                                                                                                                    LEVQSDYSSYARTSIRASLTFNRGFKAGRNMRRKLFGVLRLKCHSLFLDLQVNSLQTVCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GALSGTRHSHPSVGRQHHAGPPSTSRPPRPWDTPCPPVYABTKHFLYSSGD-KEQLRPSF
                                                                    411 VRLLRSHCRFRTANQOVTDAL-------NTSPPHLMDLLRLHSSPWQVY
                                                                                                                                                         GFVRACLRRLVPPGLWGSRHNERRFLRNTKKFISLGKHAKLSLQELTWKMSVRDCAWLRR
                                                                                                                                                                  SPGVGCVPAAEHRLREEILAKFLHWLMSVYVVELLRSFFYVTETTFQKNRLFFYRKSVWS
                                                                                                                                                                                                  KLQSIGIRQHLKRVQLRELSEAEVRQHREARPALLTSRLRFIPKPDGLRPIVNMDYVVGA
                                                                                                                                                                                                                                                           RTFRREKRAERLTSRVKALFSVLNYERARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDP
                                                                                                                                                                                                                                                                                            PPELYFVKVDVTGAYDTIPQDRLTEVIASIIK-PQNTYCVRRYAVVQKAAHGHVRKAFKS
                                                                                                                                                                                                                                                                                                                            762 HVSTLTDLQPYMRQFVAHLQET -- SPLRDAVVIEQSSSLNEASSGLFDVFLRFMCHHAVR
                                                                                                                                                                                                                                                                                                                                                                                            AKTFLRTLVRGVPEYGCVVNLRKTVVNFPVEDEALGGTAFVQMPAHGLFPWCGLLLDTRT
                                                                                                                                                                                                                                                                                                                                                                                                      GAAGPLPSEAVQWLCHQAFLLKLTRHRVTYVPLLGSLRTAQTQLSRKLPGTTLTALEAAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      LLSSLRPSLTGARRLVETIFLGSRPWMPGTPRRLPRLPQRYWQMRPLFLELLGNHAQCPY
                                                                                                                          GVLLKTHCPLRAA---VTPAAGVCAREKPQGSVAAPEEEDTDPRRLVQLLROHSSPWOVY
                                    : | |: | | | | VPSAKKARCYPVPRVEEGP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      :||| :||:||||
DPALSTDFQTILD 1122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              NPALPSDFKTILD 1132
                                                        287
                                                                                          346
                                                                                                         351
                                                                                                                                                                                                                                                           643
                                                                                                                                                                                                                                                                            633
                                                                                                                                                                                                                                                                                            703
                                                                                                                                                                                                                                                                                                                                                            820
                                                                                                                                                                                                                                                                                                                                                                                            880
                                                                                                                                                                                                                                                                                                                                                                                                                            940
                                                                                                                                                                                                                                                                                                                                                                                                                                                             1000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1060
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1110
                         232
                                                                         293
                                                                                                                         406
                                                                                                                                                                         453
                                                                                                                                                                                                           513
                                                                                                                                                                                                                                          573
                                                                                                                                                                                                                                                                                                                                                                                                            873
                                                                                                                                                          463
                                                                       g
                                                                                                      셤
                                                                                                                                      8
                                                                                                                                                                     a
                                                                                                                                                                                                        a
                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                         유
                        8
                                      셤
                                                        ò
                                                                                         ò
                                                                                                                       Š
                                                                                                                                                        ઠે
                                                                                                                                                                                         Š
                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                        ద
                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                       ð
                                                                                                                                                                                                                                                                                                                                                                                            ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                             8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             8
```

2; Wang

Σ

Frolkis

Ä,

2002US-0393295P.

```
The invention relates to a novel method for eliciting an immune response in a mammalian subject that is specific for its own telomerase reverse transcriptase (TERT), comprising administering an immunospenic composition containing a protein with at least 20 consecutive amino acids of TERT of another mammalian species, or a nucleic acid encoding the protein. A activity. The protein has cytostatic, and immunostimulant activity. The protein of the invention has cytostatic, and immunostimulant in the manufacture of a medicament for the treatment of cancer in a human or for eliciting a cytotoxic T cell response in a human.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    231
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TTDIWPSVSASYRPTRPVGRNFTNLRFLQQIKSSSRQEAPKPLALPSRGTKRHLSLTSTS 240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          LPLPKRPRRGAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPAR-----PAEEATSLE 286
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    -----HRQVLPTPSGKSW-VPSPARSPEVPTAEKDLSSK 292
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GKVSDLSLS-GSVCCKHKPSSTSLLSPPRQNAFQLRP-FIETRHFLYSRGDGQERLNPSF 350
Eliciting an immune response in a mammal specific for its own telomerase reverse transcriptase (TERT), useful for treating or preventing cancer, comprises administering a composition containing TERT of another mammalian species.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MTRAPRCPAVRSLLRSRYREVWPLATFVRRLGPEGRRLVQPGDPKIYRTLVAQCLVCMHW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SQPPPADLSFHQVSSLKELVARVVQRLCERNERNVLAFGFELLNEARGGPPMAFTSSVR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SYLPNTVTDALRGSGAWGLLLERRVGDDVLVHLLARCALFVLVAPSCAYOVCGPPLYQLGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GALSGTRHSHPSVGRQHHAGPPSTSRPPRPWDTPCPPVYAETKHFLYSSGD-KEQLRPSF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             MPRAPRCRAVRSLLRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DARPPPAAPSFROVSCLKELVARVLORLCERGAKNVLAFGFALLDGARGGPPEAFTTSVR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ATQARPPPHAS-GPRRRLG-----CERAWNHSVREAGVPLGLPAPGARRRGGSASRS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   52;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length 1122;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     58.8%; Score 3505; DB 8; 62.4%; Pred. No. 2.2e-285; ive 122; Mismatches 260;
                                                                                                                                                 Claim 10; SEQ ID NO 4; 44pp; English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    241 VPSAKKARCYPVPRVEEGP-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Ź
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence 1122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Local Simines 719;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
Best Local S:
Matches 719,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          232
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               287
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          293
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          요
```

LLSSLRPSLTGARRLVETIFLGSRPWMPGTPRRLPRLPQRYWQMRPLFLELLGNHAQCPY 405

346

8

\$

ADG90601 standard; protein; 1122

RESULT 55 ADG90601 ADG90601

SXB

```
KLQSIGIRQHLKRVQLRELSEAEVRQHREARPALLTSRLRFIPKPDGLRPIVNMDYVVGA 642
                                                                                                                                                                                     The present invention describes a transgenic mouse (1) comprising a DNA construct having a DNA containing a promoter region of mouse telomerase catalyst subunit (TERT) and a DNA containing a reporter gene connected under the control of the promoter region. The transgenic mouse can be used in the development of drugs and anticancer agents for regeneration of tissues and organs. The present sequence represents the mouse telomerase protein, which is given in the exemplification of the present
                                                                                                                      A transgenic mouse comprising a DNA promoter region of mouse telomerase catalyst subunit (TERT) is used for the development of drugs and anticancer agents for regeneration of tissues and organs.
                                                                                                                                                                                                                                                                                                                                                                TIDIWPSVSASYRPTRPVGRNFTNLRFLQQIKSSSRQEAPKPLALPSRGTKRHLSLTSTS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           LPLPKRPRRGAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPAR-----PAEEATSLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DARPPPAAPSFROVSCLKELVARVLORLCERGAKNVLAFGFALLDGARGGPPEAFTTSVR
                                                                                                                                                                                                                                                                                                                                                                                                                                        SYLPNIVIDALRGSGAWGLLLRRVGDDVLVHLLARCALFVLVAPSCAYQVCGPPLYQLGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ATOARPPHAS-GPRRRLG-----CERAWNHSVREAGVPLGLPAPGARRRGGSASRS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GALSCTRHSHPSVGRQHHAGPPSTSRPPRPWDTPCPPVYAETKHFLYSSGD-KEQLRPSF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GFVRACLRRLVPPGLWGSRHNERRFLRNTKKFISLGKHAKLSLQELTWKMSVRDCAWLRR
                                                                                                                                                                                                                                                                                                                                                     MPRAPRCRAVRSLLRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LLSSLRPSLTGARRLVETIFLGSRPWMPGTPRRLPRLPQRYWQMRPLFLELLGNHAQCPY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GVLLKTHCPLRAA---VTPAAGVCAREKPQGSVAAPEEEDTDPRRLVQLLRQHSSPWQVY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              VRLLRSHCRFRTANQQVTDAL------NTSPPHLMDLLRLHSSPWQVY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SPGVGCVPAAEHRLREEILAKFLHWLMSVYVVELLRSFFYVTETTFOKNRLFFYRKSVWS
                                                                                                                                                                                                                                                                                                                                52;
                                                                                                                                                                                                                                                                                                           Length 1122;
                                                                                                                                                                                                                                                                                                                                Indele
                                                                                                                                                                                                                                                                                                         Query Match 58.3%; Score 3475; DB 5; Best Local Similarity 61.9%; Pred. No. 7.4e-283; Matches 714; Conservative 121; Mismatches 266;
                                                                                                                                                                 Disclosure; Fig 3; 13pp; Japanese.
                                                                    SHINKOKAI
                         23-JUN-2000; 2000JP-00190137
                                                                   ZH RIKOGAKU SHINK
KIRIN BREWERY KK.
                                                                                                   WPI; 2002-298279/34.
                                                                                                                                                                                                                                                                                      Sequence 1122 AA;
                                              23-JUN-2000;
     08-JAN-2002
                                                                                                                                                                                                                                                                   invention
                                                                                                                                                                                                                                                                                                                                                                                                                   61
                                                                                                                                                                                                                                                                                                                                                                                                                                                             121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       583
                                                                                                                                                                                                                                                                                                                                                                                              61
                                                                                                                                                                                                                                                                                                                                                                                                                                        121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            232
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      287
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           293
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                346
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     351
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          406
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               411
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         453
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               523
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   513
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    463
                                                                             (KIRI)
     à
                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                    숨 &
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         임
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1109
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   NIYKILLLQAYRFHACVLQLPFHQQVWKNPTFFLRVISDTASLCYSILKAKNAGMSLGAK 1059
                                  462
                                                       452
                                                                             522
                                                                                                512
                                                                                                                      582
                                                                                                                                           572
                                                                                                                                                                 642
                                                                                                                                                                                     632
                                                                                                                                                                                                          702
                                                                                                                                                                                                                                 692
                                                                                                                                                                                                                                                    761
                                                                                                                                                                                                                                                                          752
                                                                                                                                                                                                                                                                                               819
                                                                                                                                                                                                                                                                                                                   812
                                                                                                                                                                                                                                                                                                                                          879
                                                                                                                                                                                                                                                                                                                                                                                   939
                                                                                                                                                                                                                                                                                                                                                                                                                            999
                                                                                                                                                                                                                                                                                                                                                                                                                                                 992
                                                                                                                                                                                                                                                                                                                                                                                                       932
PPELYPVKVDVTGAYDTIPQDRLTEVIASIIK-PQNTYCVRRYAVVQKAAHGHVRKAFKS
                                                                                                                                                                                                                                                               IRGKSYVQCQGIPQGSILSTLLCSLCYGDMENKLFAGIRRDGLLLRLVDDFLLVTPHLTH
                                                                                                                                                                                                                                                                                                                                                    |:-FPPEAAHWLCYQAFILKLAAHSVIYKCLIGPLRTAQKLLCRKLPEATMTILKAAA
                                                                          GFVRACLRRLVPPGLWGSRHNERRFLRNTKKFISLGKHAKLSLQELTWKMSVRDCAWLRR
                                                                                                                                                              KLQSIGIRQHLKRVQLRELSEAEVRQHREARPALLTSRLRFIPKPDGLRPIVNMDYVVGA
                                                                                                                                                                                                         RTFRREKRAERLTSRVKALFSVLNYERARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDP
                                                                                                                                                                                                                                                                                             HVSTLTDLQPYMRQFVAHLQET--SPLRDAVVIEQSSSLNEASSGLFDVFLRFMCHHAVR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                mTERT;
                                                    VRLLRSHCRFRTANQQVTDAL-------NTSPPHLMDLLRLHSSPWQVY
                                                                                                                     SPGVGCVPAAEHRLREEILAKFLHWLMSVYVVELLRSFFYVTETTFQKNRLFFYRKSVWS
                                                                                                                                                                                                                                                                                                                                                                                                                           LEVQSDYSSYARTSIRASLTFNRGFKAGRNMRRKLFGVLRLKCHSLFLDLQVNSLQTVCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GAAGPLPSEAVOWLCHOAFILKLTRHRVTYVPLLGSLRTAQTQLSRKLPGTTLTALEAAA
                                GVLLKTHCPLRAA----VTPAAGVCAREKPQGSVAAPEEEDTDPRRLVQLLRQHSSPWQVY
                                                                                                                                                                                                                                                                                                                                                                                 AKTFLRTLVRGVPEYGCVVNLRKTVVNFPVEDEALGGTAFVQMPAHGLFPWCGLLLDTRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       promoter; telomerase catalyst subunit; mouse; drug development; anticancer.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ä
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Mouse telomerase protein sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    protein; 1122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  :||| :||:||||
DPALSTDFQTILD 1122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NPALPSDFKTILD 1132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (first entry
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  transgenic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           JP2002000121-A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            11-JUN-2002
                                                      411
                                                                                                                                                              583
                                                                                                                                                                                    573
                                                                                                                                                                                                         643
                                                                                                                                                                                                                               633
                                                                                                                                                                                                                                                   703
                                                                                                                                                                                                                                                                                                                  753
                                                                                                                                                                                                                                                                                                                                                                                                                           940
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          993
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1060
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1053
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1110
            351
                                406
                                                                          463
                                                                                                453
                                                                                                                     523
                                                                                                                                          513
                                                                                                                                                                                                                                                                       693
                                                                                                                                                                                                                                                                                                                                       820
                                                                                                                                                                                                                                                                                                                                                            813
                                                                                                                                                                                                                                                                                                                                                                                 880
                                                                                                                                                                                                                                                                                                                                                                                                       873
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ABB06711
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ABB06711
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  enzyme;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Mouse;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RESULT 56
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Mue
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        요
                                                                        ò
                                                                                           유
                                                                                                                  ò
                                                                                                                                   ద
                                                                                                                                                       õ
                                                                                                                                                                               g
                                                                                                                                                                                                       ò
                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                            à
                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                  8 6
                               ò
                                                                                                                                                                                                                                                                                     ે
                                                                                                                                                                                                                                                                                                           ద
                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                엄
                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
```

9 9

Gaps

us-10-053-758-225.rag

```
This sequence is a truncated human telomerase of the invention. Primers that amplify the telomerase coding sequence can be used in a method for diagnosing cancer in a patient. The telomerase can be used for detection, diagnosis and drug screening. Inhibitors of telomerase activity can be used to treat cancers such as melanomas, other skin cancers, can entroblastomas, breast carcinomas, colon carcinomas, leukaemias, lymphomas, osteosarcomas or smooth muscle cell hyperplasias or skin growths. Enhancers of telomerase may be used to stimulate stem cell crowths. Enhancers of telomerase may be used to stimulate stem cell could be administered in the bone marrow transplant context). As well, can wound healing, hair growth, treatment of disease such as Wilm's tumour, organ regeneration or differentiation after injury or diseases, nerve cell or brain cell growth following injury. Note: The C-terminus of this sequence can be replaced by the sequence shown in AAY00653
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1 MPRAPRCRAVRSLLRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MPRAPRCRAVRSLLRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DARPPPAAPSFROVSCLKELVARVLORLCERGAKNVLAFGFALLDGARGGPPEAFTTSVR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DARPPPAAPSFRQVSCLKELVARVLQRLCERGAKNVLAFGFALLDGARGGPPEAFTTSVR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SYLPNTVTDALRGSGAWGLLLRRVGDDVLVHLLARCALFVLVAPSCAYQVCGPPLYQLGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SYLPNIVIDALRGSGAWGLLLRRVGDDVLVHLLARCALFVLVAPSCAYQVCGPPLYQLGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       LAKFLHWL-----IRQHLKRVQLRE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ATQARPPHASGPRRRLGCERAWNHSVREAGVPLGLPAPGARRRGGSASRSLPLPKRPRR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ATQARPPPHASGPRRRIGCERAWNHSVREAGVPLGLPAPGARRGGSASRSLPLPKRPRR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      361 VETIFLGSRPWMPGTPRRLPRLPQRYWQMRPLFLELLGNHAQCPYGVLLKTHCPLRAAVT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PAAGYCAREKPOGSVAAPEEEDTDPRRIVOLIRQHSSPWOYYGFVRACIRRIVPPGLWGS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ROHHAGPPSTSRPPRPWDTPCPPVYAETKHFLYSSGDKEQLRPSFLLSSLRPSLTGARRL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PAAGVCAREKPQGSVAAPEEEDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RHNERRFLRNTKKFISLGKHAKLSLQELTWKMSVRDCAWLRRSPGVGCVPAAEHRLREEI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      LAKFLHWLMSVYVVELLRSFFYVTETTFQKNRLFFYRKSVWSKLQSIGIRQHLKRVQLRE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             VETIFLGSRPWMPGTPRRLPRLPQRYWQMRPLFLELLGNHAQCPYGVLLKTHCPLRAAVT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RHNERRFLRNTKKF1SLGKHAKLSLQELTWKMSVRDCAWLRRSPGVGCVPAAEHRLREE1
                                                                New isolated vertebrate telomerase genes - used to develop products f
treating cancers or for organ regeneration, nerve cell or brain cell
growth following injury or bone marrow transplantation.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      40;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     601 LSEAEVRQHREARPALLTSRLRFIPKPDGLRPIVNMDYVVGARTFRREKR 650
                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match 54.3%; Score 3238; DB 2; Length 617; Best Local Similarity 93.8%; Pred. No. 2.9e-263; Matches 610; Conservative 0; Mismatches 0; Indels 40
                                                                                                                                Claim 4; Fig 11b-c; 134pp; English.
                                  N-PSDB; AAX18264
                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence 617 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        541
      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      993 NIXKIFLLQAYRFHACVIQLPFDQRVRKNLTFFLGIISSQASCCYALLKVKNPGNTLKAS 1052
                                                                                                                                                                                                                                                                                                                                                                                                                                      1000 NIYKILLLQAYRFHACVLQLPFHQQVWKNPTFFLRVISDTASLCYSILKAKNAGMSLGAK 1059
                     632
                                                 702
                                                                                                                                                                              819
                                                                                                               761
                                                                                                                                             752
                                                                                                                                                                                                                                                            939
                                                                                                                                                                                                                                                                                                                                         932
                                                                                                                                                                                                                                                                                                                                                                                           Telomerase; human, cancer; diagnosis; melanoma; skin cancer; leukaemia; neuroblastoma; breast carcinoma; colon carcinoma; lymphoma; osteosarcoma; smooth muscle cell hyperplasia; stem cell proliferation; Wilm's tumour; stem cell differentiation; organ regeneration; organ differentiation.
                                                                                                                                                                                                                                                                                                                                                                          LEVQSDYSSYARTSIRASLTFNRGFKAGRNMRRKLFGVLRLKCHSLFLDLQVNSLQTVCT 999
                                                                                                                                                                                                                                          IRGKSYVQCQGIPQGSILSTLLCSLCYGDMENKLFAGIRRDGLLLRLVDDFLLVTPHLTH
PPELYFVKVDVTGAYDTIPQDRLTEVIASIIK-PQNTYCVRRYAVVQKAAHGHVRKAFKS
                                                                                                                              RTFRREKRAERLTSRVKALFSVLNYERARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDP
                                                                                                                                                                            HVSTLTDLQPYMRQFVAHLQET - - SPLRDAVVIEQSSSLNEASSGLFDVFLRFMCHHAVR
                                                                                                                                                                                                                                                                                                         AKTFLRTLVRGVPEYGCVVNLRKTVVNFPVEDEALGGTAFVQMPAHGLFPWCGLLLDTRT
                                                                                                                                                                                                                                                                                                                           GAAGPLPSEAVQWLCHQAFLLKLTRHRVTYVPLLGSLRTAQTQLSRKLPGTTLTALEAAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            N-terminal truncated telomerase protein sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AAY00636 standard; protein; 617
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   97US-0051410P.
97US-0053018P.
97US-0053329P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       BIOSYSTEMS LLC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     97US-0054642P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         98WO-US013835
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   :||| :||:||||
DPALSTDFQTILD 1122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1120 NPALPSDFKTILD 1132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Kilian A, Bowtell D;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CAMBIA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Homo sapiens.
Synthetic.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          WO9901560-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         01-JUL-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        09-SEP-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       01-JUL-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         14-JAN-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      21-JUL-1997
21-JUL-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     04-AUG-1997
                                                 643
                                                                              633
                                                                                                             703
                                                                                                                                                                                                                                          820
                                                                                                                                                                                                                                                                                                                                       873
                                                                                                                                                                                                                                                                                                                                                                        940
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1060
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1110
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       (CAMB-)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AAY00636
                                                                                                                                          용
                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                8
                                                                            셤
                                                                                                            ò
                                                                                                                                                                           8
                                                                                                                                                                                                     음
                                                                                                                                                                                                                                       ઠે
                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                      ઠે
                                                                                                                                                                                                                                                                                                                                  원
                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
```

120

9

Gaps

300 300 360 480

480

420

360 360 420 420 480 480 540 540

```
SYLPNTVTDALRGSGAWGLLLRRVGDDVLVHLLARCALFVLVAPSCAYQVCGPPLYQLGA
                                                                                                                                                                                                                                            GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG
                                                                                                                                                                                                                                                                                                                               ROHHAGPPSTSRPPREPUTPCPPVYAETKHFLYSSGDKEQLRPSFLLSSLRPSLTGARRL
                                                                                                                                                                                                                                                                                                                                                        VETIFLGSR PWMPGTPRRLPRLPQRYWQMRPLFLELLGNHAQCPYGVLLKTHCPLRAAVT
                                                                                                                                                                                                                                                                                                                                                                                                                                           ATQARPPPHASGPRRRLGCERAWNHSVREAGVPLGLPAPGARRRGGSASRSLPLPKRPRR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PAAGVCAREKPOGSVAAPEEEDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RHNERRFLRNTKKFISLGKHAKLSLQELTWKMSVRDCAWLRRSPGVGCVPAAEHRLREEI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          LAKFLHWLMSVYVVELLRSFFYVTETTFQKNRLFFYRKSVWSKLQSIG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AAY00644 standard; protein; 588
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 26-JUL-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    WO9901560-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     01-JUL-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              09-SEP-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               01-JUL-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              14-JAN-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   21-JUL-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            04-AUG-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Synthetic.
                                                                                                                                                                                                     181
                                   61
                                                                          121
                                                                                                                 121
                                                                                                                                                             181
                                                                                                                                                                                                                                              241
                                                                                                                                                                                                                                                                                                                             301
                                                                                                                                                                                                                                                                                                                                                                                                                                                        361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AAY00644;
                                                                                                                                                                                                                                                                                                                                                                                                              361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Homo
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         RESULT
                                                                                                       셤
                                                           à
                                                                                                                                                         ò
                                                                                                                                                                                          셤
                                                                                                                                                                                                                                            à
                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                This sequence is a truncated human telomerase of the invention. Primers that amplify the telomerase coding sequence can be used in a method for diagnosing cancer in a patient. The telomerase can be used for detection, diagnosis and drug screening. Inhibitors of telomerase activity can be used to treat cancers such as melanomas, other skin cancers.

The tropical sequences of carcinomas, colon carcinomas, leukaemias, neutoblastomas, breast carcinomas, colon carcinomas, leukaemias, herosat carcinomas, colon carcinomas, leukaemias, convents. Enhancers of telomerase may be used to stimulate stem cells proliferation and differentiation (expansion of haematopoietic stem cells could be administered in the bone marrow transplant context). As well, many tissues have stem cells. Proliferation of these cells may be useful in wound healing, hair growth, treatment of disease such as Wilm's tumour, organ regeneration or differentiation after injury or diseases, reversely and the context of the colour and the colour c
                                                                                                                                                                                                                                                                                          Telomerase; human; cancer; diagnosis; melanoma; skin cancer; leukaemia; neuroblastoma; breast carcinoma; colon carcinoma; lymphoma; osteosarcoma; smooth muscle cell hyperplasia; stem cell proliferation; Wilm's tumour; stem cell differentiation; organ regeneration; organ differentiation.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              New isolated vertebrate telomerase genes - used to develop products for treating cancers or for organ regeneration, nerve cell or brain cell growth following injury or bone marrow transplantation.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
                              610
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ;
0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
53.0%; Score 3160; DB 2; Length
Best Local Similarity 100.0%; Pred. No. 9.9e-257;
Matches 588; Conservative 0; Mismatches 0; Indels
                                                                                                                                                                                                                                                   N-terminal truncated telomerase protein sequence.
                                                                                                                                 $
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Claim 4; Fig 11a; 134pp; English.
                                                                                                                            protein; 588
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       97US-0051410P.
97US-0053018P.
97US-0053329P.
97US-0054642P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (CAMB-) CAMBIA BIOSYSTEMS LLC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  98WO-US013835
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             97US-0058287P
                                                                                                                                                                                                              (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Bowtell D;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1999-106060/09.
                                                                                                                        AAY00635 standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       N-PSDB; AAX18263.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence 588 AA;
                                                                                                                                                                                                           26-JUL-1999
                                                                                                                                                                                                                                                                                                                                                                                                      sapiens.
                                                                                                                                                                                                                                                                                                                                                                                                                                                               WO9901560-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                01-JUL-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    04-AUG-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        14-JAN-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       01-JUL-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             21-JUL-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     21-JUL-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Kilian A,
                                                                                                                                                                                                                                                                                                                                                                                                                         Synthetic.
                                                                                                                                                                    AAY00635;
                     561
                                                                                                                                                                                                                                                                                                                                                                                                   Ношо
```

588

Ş

```
Telomerase; human, cancer; diagnosis; melanoma; skin cancer; leukaemia; neuroblastoma; breast carcinoma; colon carcinoma; lymphoma; osteosarcoma; smooth muscle cell hyperplasia; stem cell proliferation; Wilm's tumour; stem cell differentiation; organ regeneration; organ differentiation.
N-terminal truncated telomerase (ver. 2) protein sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                  97US-0051410P.
97US-0053018P.
97US-0053329P.
97US-0054642P.
97US-0058287P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    BIOSYSTEMS LLC
                                                                                                                                                                                                                                                                                                                                                                                     98WO-US013835
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             å
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              WPI; 1999-106060/09.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Kilian A, Bowtell
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     N-PSDB; AAX18272
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (CAMB-) CAMBIA
```

DARPPPAAPSFRQVSCLKELVARVLQRLCERGAKOVLAFGFALLDGARGGPPEAFTTSVR 120

9 9

MPRAPRCRAVRSLIRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW

원 ò

ò

detection;

telomerase; inhibitor;

```
ene, useful in detection of telomerase activity and cancer cells as screening telomerase inhibitors for treatment of cancers.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        This invention describes novel human CRT-1 genes and their encoded
                                                                                                                                                                                         /note= "Partial sequence, no stop codon given"
                                                                                              telomerase activity; cancer cell; screening; human
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Example 1; Page 37-39; 44pp; Japanese.
                                                                                                                                               Location/Qualifiers
1. .622
/label= CRT-1
                                                                                   transcriptase;
                                                                                                                                                                                                                                                                                                   98JP-00013232.
98JP-00033584.
98JP-00139177.
                                                                                                                                                                                                                                                                          99WO-JP000039
                                                                                                                                                                                                                                                                                                                                                        (CHUS ) CHUGAI SEIYAKU KK.
                                                                                                                                                                                                                                                                                                                                                                                   Yoshida K;
                                                      Human CRT-1 protein #3
                             (first
                                                                                                                                                                                                                                                                                                                                                                                                              WPI; 1999-430393/36.
N-PSDB; AAX88251.
                                                                                                                                                                                                                                                                                                                                                                                                                                                    Novel gene, useful as well as screenin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sequence 622 AA;
                                                                                                                           sapiens
                                                                                                                                                                                                                     W09935261-A1
                                                                                                                                                                                                                                                                          38-JAN-1999;
                                                                                                                                                                                                                                                                                                                                                                                   Isuchiya M,
                                                                                                                                                                                                                                                                                                                              06-MAY-1998;
                             22-SEP-1999
                                                                                                                                                                                                                                                                                                   08-JAN-1998;
                                                                                                                                                                                                                                               15-JUL-1999
  AAY25463;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         570
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             630
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        750
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    240
                                                                                                                                                   Key
Protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  690
                                                                                                                           Ношо
    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 용
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     8
                                                                            This sequence is a truncated human telomerase of the invention. Primers that amplify the telomerase coding sequence can be used in a method for diagnosing cancer in a patient. The telomerase can be used for detection, diagnosis and drug screening. Inhibitors of telomerase activity can be used to treat cancers such as melanomas, other skin cancers, can entroblatomas, breast carcinomas, colon carcinomas, leukaemias, lymphomas, osteosarcomas or smooth muscle cell hyperplasias or skin growths. Enhancers of telomerase may be used to stimulate stem cell covould be administered in the bone marrow transplant context). As well, many tissues have stem cells. Proliferation of these cells may be useful in wound healing, hair growth, treatment of disease such as Wilm's tumour, organ regeneration or differentiation after injury or diseases, nerve cell or brain cell growth following injury. Note: The N-terminus of this sequence can be replaced by the sequences shown in AAY00656-Y00658
                                                                                                                                                                                                                                                                                                                                                                                                                                         120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GAAPEPERTPVGGGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG 300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG 300
                                                                                                                                                                                                                                                                                                                                                                                   9
                                                                                                                                                                                                                                                                                                                                                                                                              9
    for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SYLPNTVTDALRGSGAWGLILRRVGDDVLVHLLARCALFVLVAPSCAYQVCGPPLYQLGA
                                                                                                                                                                                                                                                                                                                                                                                  1 MPRAPRCRAVRSLLRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW
                                                                                                                                                                                                                                                                                                                                                                                                   DARPPPAAPSFRQVSCLKELVARVLQRLCERGAKNVLAFGFALLDGARGGPPEAFTTSVR
                                                                                                                                                                                                                                                                                                                                                                                                                                                       121 SYLPNTVIDALRGSGAWGLLLRRVGDDVLVHLLARCALFVLVAPSCAYQVCGPPLYQLGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ATQARPPHASGPRRRIGCERAWNHSVREAGVPLGLPAPGARRRGGSASRSLPLPKRPRR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ATQARPPHASGPRRRLGCERAWNHSVREAGVPLGLPAPGARRRGGSASRSLPLPKRPRR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ROHHAGPPSTSRPPRPWDTPCPPVYAETKHFLYSSGDKEQLRPSFLLSSLRPSLTGARRL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         VETIFLGSRPWMPGTPRRLPRLPQRYWQMRPLFLELLGNHAQCPYGVLLKTHCPLRAAVT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PAAGVCAREKPOGSVAAPEBEDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PAAGVCAREKPQGSVAAPBEBDTDPRRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RHNERRFLRNTKKFI SLGKHAKLSLQEL TWKMSVRDCAWLRRSPGVGCVPAAEHRLREEI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        RHNERRFLRNTKKFISLGKHAKLSLQELTWKMSVRDCAWLRRSPGVGCVPAAEHRLREEI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                VETIFLGSRPWMPGTPRRLPRLPQRYWQMRPLFLELLGNHAQCPYGVLLKTHCPLRAAVT
                                                                                                                                                                                                                                                                                                                                                          Gaps
New isolated vertebrate telomerase genes - used to develop products : treating cancers or for organ regeneration, nerve cell or brain cell growth following injury or bone marrow transplantation.
                                                                                                                                                                                                                                                                                                                                                          .;
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             LAKFLHWLMSVYVVELLRSFFYVTETTFQKNRLFFYRKSVWSKLQSIG 588
                                                                                                                                                                                                                                                                                                                               DB 2; Length 588;
                                                                                                                                                                                                                                                                                                                                                        2; Indels
                                                                                                                                                                                                                                                                                                                              Score 3144; DB 2;
Pred. No. 2.2e-255;
0; Mismatches 2;
                                                      Claim 4; Fig 11t-u; 134pp; English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           standard; protein; 622
                                                                                                                                                                                                                                                                                                                            52.7%;
                                                                                                                                                                                                                                                                                                                                          Best Local Similarity 99.7
Matches 586; Conservative
                                                                                                                                                                                                                                                                                                    Sequence 588 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     301
                                                                                                                                                                                                                                                                                                                                                                                                                                         61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AAY25463
                                                                                                                                                                                                                                                                                                                               Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AAY25463
ID AAY2
XX
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 RESULT
 셤
                                                                                                                                                                                                                                                                                                                                                                                   ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                       ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                            요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               8
```

ä 629 119 689 LRPIVNMDYVVGARTFRREKRAERLTSRVKALFSVLNYERARRPGLLGASVLGLDDIHRA 179 749 239 809 299 869 AAHGHVRKAFKSHVSTLTDLQPYMRQFVAHLQETSPLRDAVVIEQSSSLNEASSGLFDVF 510 WKMSVRDCAWLRRSPGVGCVPAAEHRLREEILAKFLHWLMSVYVVELLRSFFYVTETTFQ WRIFVLRVRAQDPPPELYFVKVDVTGAYDTIPQDRLTEVIASIIKPQNTYCVRRYAVVQK **AAHGHVRKAFKSHVSTLTDLQPYMRQFVAHLQETSPLRDAVVIEQSSSLNEASSGLFDVF** LRFMCHHAVRIRGKSYVQCQGIPQGSILSTLLCSLCYGDMENKLFAGIRRDGLLLRLVDD XNRLFFYRKSVWSKLQSIGIRQHLKRVQLRELSEAEVRQHRBARPALLTSRLRFIPKPDG WRIFVLRVRAQDPPPELYFVKVDVTGAYDTIPQDRLTEVIASIIKPQNTYCVRRYAVVQK **LRPIVNMDYVVGARTFRREKRAERLTSRVKALFSVLNYERARRPGLLGASVLGLDDIHRA** Gaps proteins containing a reverse transcriptase motif, which act as telomerase inhibitors. The gene, its encoded protein and derived antibodies can be used to provide base sequence information, detect telomerase activity and cancer cells, and to screen telomerase inhibitors. The detection method is simple and effective 4 Length 622; Indels ; Query Match S2.6%; Score 3134; DB 2; Best Local Similarity 97.9%; Pred. No. 1.7e-254; Matches 610; Conservative 3; Mismatches 6; 810

Ş

us-10-053-758-225.rag

요 ò g ò 8 ò 셤 ò

ò

```
1022 HQQVWKNPTFFLRVISDTASLCYSILKAKNAGMSLGAKGAAGPLPSEAVQWLCHQAFLLK 1081
                                                                                                                                                                                                                                                        RGFKAGRNMRRKLFGVLRLKCHSLFLDLQVNSLQTVCTNIYKILLLGAYRFHACVLQLPF 1021
                                                                                                                                     300
                                                                                                                                                                         480
                                                                781
                                                                                                                                                                                                            961
                                                                                                                                                              901
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            New human telomerase reverse transcriptase tumor-associated MHC-I or MHC-I II restricted polynucleotides and antigens, useful for treating cancers (e.g. lung or bone cancer or lymphomas), Crohn's disease or multiple
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Human, telomerase reverse transcriptase; MHC; tumour-associated antigen; hyperproliferative disease; major histocompatibility complex; hTRT; TAA; immune-mediated disease; systemic lupus erythematosus; protein therapy; Grave's disease; multiple sclerosis; atherosclerosis; cancer; diabetes; crohn's disease; gene therapy; arthritis; enzyme; vaccine; vasculitis; call therapy.
                                                                            KTVVNFPVEDEALGGTAFVQMPAHGLFPWCGLLLDTRTLEVQSDYSSYARTSIRASLTFN
                                                                                                                                                         CSLCYGDMENKLFAGIRRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGCVVNLR
                                                                                                            ETSPLRDAVVIEQSSSLNEASSGLFDVFLRFMCHHAVRIRGKSYVQCQGIPQGSILSTLL
                                                                                                                                                                                                                                                                          421 RGFKAGRINMRRKLFGVLRLKCHSLFLDLQVNSLQTVCTNIYKILLLQAYRFHACVLQLPF
                                                                                                                                                                                                                                                                                                                     1132
                                                                                                                                                                                                                                                                                                                                                   LTRHRVTYVPLLGSLRTAQTQLSRKLPGTTLTALEAAANPALPSDFKTILD
                                                                                                                                                                                                                                                                                                                                                                   LTRHRVIYVPLIGSLRTAQTQLSRKLPGTTLTALEAAANPALPSDFKTILD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Human telomerase reverse transcriptase (hTRT).
                                                                                                                                                                                                                                                                                                                                                                                                                                         Ä.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Example 9; Fig 2C; 143pp; English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Schroers R;
                                                                                                                                                                                                                                                                                                                                                                                                                                      AAO29840 standard; protein; 500
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (BAYU ) BAYLOR COLLEGE MEDICINE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         29-OCT-2002; 2002WO-US034588
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 29-OCT-2001; 2001US-0345012P
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Zhaoyang Y,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      WPI; 2003-430511/40.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           WO2003038047-A2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Homo sapiens.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      27-AUG-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   08-MAY-2003.
                                                                                                                                                                                                          902
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  sclerosis.
                                      121
                                                              722
                                                                                      181
                                                                                                            782
                                                                                                                                    241
                                                                                                                                                             842
                                                                                                                                                                                  301
                                                                                                                                                                                                                                                         962
                                                                                                                                                                                                                                                                                                                                                     1082
                                                                                                                                                                                                                                                                                                                                                                            541
                                                                                                                                                                                                                                                                                                                                                                                                                                                              AAO29840;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Chen S,
                                g
                                                          à
                                                                             셤
                                                                                                                            g
                                                                                                                                                                                                                             셤
                                                                                                   8
                                                                                                                                                          ò
                                                                                                                                                                             원
                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                         ठे
                                                                                                                                                                                                                                                                                                      à
                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                        유
                                                                                                                       1049
                                                                                                                                                                  KNAGMSLGAKGAAGPLPSEAVQWLCHQAFLLKLTRHRVTYVPLLGSLRTAQTQLSRKLPG 1109
                                                                                                                                                                                            599
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ö
                                                                                              479
LRFMCHHAVRIRGKSYVQCQGIPQGSILSTLLCSLCYGDMENKLFAGIRRDGLLLRLVDD 359
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        animal and a gene coding
the change in activity of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        The present sequence represents a catalytic telomerase protein. The products are useful in drug compositions for the diagnosis of diseases caused by the change in activity of telomerase
                                    WCGLLLDTRTLEVQSDYSSYARTSIRASLTFNRGFKAGRNMRRKLFGVLRLKCHSLFLDL
                                                                                  QVNSLQTVCTNIYKILLLQAYRFHACVLQLPFHQQVWKNPTFFLRVISDTASLCYSILKA
                                                                                                                                KNAGMSLGAKGAAGPLPSEAVQWLCHQAFLLKLTRHRVTYVPLLGSLRTAQTQLSRKLPG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SEAEVROHREARPALLTSRLRFIPKPDGLRPIVNMDYVVGARTFRREKRAERLTSRVKAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            542 AKFLHWLMSVYVVELLRSFFYVTETTFQKNRLFFYRKSVWSKLQSIGIRQHLKRVQLREL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         .
                                                                                                                                                                                                                                                                                                                                                                                             Catalytic telomerase; diagnosis; disease; telomerase activity.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               51.1%; Score 3047; DB 2; Length 591; 100.0%; Pred. No. 3.3e-247; ive 0; Mismatches 0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  New catalytic protein of telomerase of a higher it - useful for diagnosis of diseases caused by
                                                                                                                                                                                                                 TTLTALEAAANPALPSDFKTILD 1132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Claim 1; Page 11-14; 18pp; Japanese.
                                                                                                                                                                                                                                                                                                     ¥
                                                                                                                                                                                                                                 TTLTALEAAANPALPSDFKTILD
                                                                                                                                                                                                                                                                                                  AAW97384 standard; protein; 591
                                                                                                                                                                                                                                                                                                                                                                       A catalytic telomerase protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             97JP-00207708
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (MITU ) MITSUBISHI CHEM CORP.
                                                                                                                                                                                                                                                                                                                                                 entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               WPI; 1999-208111/18.
N-PSDB; AAX15923.
                                                                                                                                                                                                                                                                                                                                                (first
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Best Local Similarity
Matches 591; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Sequence 591 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          telomerase.
                                                                                                                                                                                                                                                                                                                                                                                                                     Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                             JP11046768-A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           01-AUG-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 01-AUG-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     23-FEB-1999.
                                                                                                                                                                  1050
                                              360
                                                                     930
                                                                                            420
                                                                                                                                          480
                                                                                                                                                                                                                 1110
                                                                                                                   990
                                                                                                                                                                                         540
                                                                                                                                                                                                                                       009
                                                                                                                                                                                                                                                                                                                         AAW97384;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           602
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     н
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
                                                                                                                                                                                                                                                                            RESULT 61
```

g ð

ò

ŝ

Saeboe-Larssen

Moller M,

Ö

Gaudernack

Eriksen JA,

(GEMV-) GEMVAX AS

WPI; 2003-129380/12

16-MAY-2002; 2002WO-NO000176. 21-MAY-2001; 2001GB-00012342

WO200294312-A1

us-10-053-758-225.rag

```
8XCXCCCCCCCCX8XTTTTTXBXBXBXBXBXBXBXBX
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ર્જ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      8
          The invention relates to human telomerase reverse transcriptase (hTRT) major histocompatibility complex (MHC)-I and MHC-II restricted tumourassociated antigens (TPA) and polymucleotides encoding such proteins. The invention is useful for treating hyperproliferative diseases such as cancer (e.g. lung cancer, head and neck cancer, pancreatic cancer, breast cancer, renal cancer, bone cancer, testicular cancer, cervical cancer, asstrointestinal cancer, lymphomas, colon cancer, preneoplastic lesions in the lung, melanoma or bladder cancer) or immunemediated diseases which include arthritis, Crohn's disease, vasculitis, and assase, multiple sclerosis, atherosclerosis, diabetes, systemic lupus erythematosus etc. The invention is used in gene therapy, protein therapy, call therapy and also in the preparation of vaccines. The present sequence is hTRT protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SIRASLIFNRGFKAGRNMRRKLFGVLRLKCHSLFLDLQVNSLQTVCTNIYKILLLQAYRF 1012
                                                                                                                                                                                                                                                                      EHRLREEILAKFLHWLMSVYVVELLRSFFYVTETTFOKNRLFFYRKSVWSKLQSIGIRQH 592
                                                                                                                                                                                                                                                                                                                        652
                                                                                                                                                                                                                                                                                                                                                120
                                                                                                                                                                                                                                                                                                                                                                         712
                                                                                                                                                                                                                                                                                                                                                                                     772
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             832
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          241 MRQFVAHLQETSPLRDAVVIEQSSLNEASSGLFDVFLRFMCHHAVRIRGKSYVQCQGIP 300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              892
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          EYGCVVNLRKTVVNFPVEDEALGGTAFVQMPAHGLFPWCGLLLDTRTLEVQSDYSSYART 420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SIRASLIFNRGFKAGRNMRRKLFGVLRLKCHSLFLDLQVNSLQTVCTNIYKILLLQAYRF 480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                telomerase reverse transcriptase; hTERT; T cell response; vaccine;
                                                                                                                                                                                                                                                                                               9
                                                                                                                                                                                                                                                                                    EHRLREBILAKFLHWLMSVYVVELLRSFFYVTETTFQKRRLFFYRKSVWSKLQSIGIRQH
                                                                                                                                                                                                                                                                                                                        LKRVQLRELSEAEVRQHREARPALLTSRLRFIPKPDGLRPIVNMDYVVGARTFRREKRAE
                                                                                                                                                                                                                                                                                                                                                                         RLTSRVKALFSVLNYERARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDPPPELYFVKVD
                                                                                                                                                                                                                                                                                                                                       LKRVQLRELSEAEVRQHREARPALLISRLRFIPKPDGLRPIVMMDYVVGARTFRREKRAE
                                                                                                                                                                                                                                                                                                                                                                                                                           VTGAYDTI PQDRLTEVIASI I KPQNTYCVRRYAVVQKAAHGHVRKAFKSHVSTLTDLQPY
                                                                                                                                                                                                                                                                                                                                                                                                                                         MRQFVAHLQETSPLRDAVVIEQSSSLNEASSGLFDVFLRFMCHHAVRIRGKSYVQCQGIP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              QGSILSTLLCSLCYGDMENKLFAGIRRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 EYGCVVNLRKTVVNFPVEDEALGGTAFVQMPAHGLFPWCGLLLDTRTLEVQSDYSSYART
                                                                                                                                                                                                                                            Gaps
                                                                                                                                                                                                                                              ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        reverse transcriptase
                                                                                                                                                                                                                   Length 500;
                                                                                                                                                                                                                                            IndelB
                                                                                                                                                                                                                   43.4%; Score 2590; DB 6; L
100.0%; Pred. No. 7.8e-209;
ive 0; Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      of human telomerase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ź
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      HACVLQLPFHQQVWKNPTFF 1032
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ABB99678 standard; protein; 499
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   HACVLOLPFHQQVWKNPTFP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (first entry)
                                                                                                                                                                                                                Query Match
Best Local Similarity 100.
Matches 500, Conservative
                                                                                                                                                                                        Sequence 500 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1013
                                                                                                                                                                                                                                                                                                                                                                                                   121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 953
                                                                                                                                                                                                                                                                                                                        593
                                                                                                                                                                                                                                                                                                                                                                        653
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               893
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ABB99678
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Human;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               cancer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ABB99678
XX
AC ABB9
XX
XX
DT 28-M
XX
XX
XY
XX
XX
XX
XX
XW
HUME
XW
CANC
XX
XX
XX
XX
XX
XX
XX
a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          임
                                                                                                                                                                                                                                                                      8
                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     8
                                                                                                                                                                                                                                                                                                                       à
                                                                                                                                                                                                                                                                                                                                                                                                                         à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           셤
```

```
MSLGAKGAAGPLPSEAVQWLCHQAFLLKLTRHRVTYVPLLGSLRTAQTQLSRKLPCTTLT 1113
                                 or in
                                                                                                                                                                                                    The present sequence represents a fragment of human telomerase reverse transcriptase (hTERT). The specification describes peptides derived from hTERT, which are capable of inducing a T cell response and are used in medicine. The hTERT peptides and nucleic acids encoding them are useful in preparing a medicament, which is a vaccine, an antisense molecule, or is capable of generating an antisense molecule in vivo, for treating cancer, or in preparing a diagnostic for diagnosing cancer. The cancer is, for example, breast cancer, prostate cancer, pancreatic cancer, cectal cancer, lung cancer, mailgnant melanoma, leukemia, lymphoma, ovarian cancer, cervical cancer, or a biliary tract carcinoma
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     753
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      993
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         VINIDYVVGARTFRREKRAERLISRVKALFSVLNYERARRPGLLGASVLGLDDIHRAWRTF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        694 VLRVRAQDPPPELYFVKVDVTGAYDTIPQDRLTEVIASIIKPQNTYCVRRYAVVQKAAHG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          VLRVRAQDPPPELYFVKVDVTGAYDTIPQDRLTEVIASIIKPQNTYCVRRYAVVQKAAHG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               HVRKAFKSHVSTLTDLQPYMRQFVAHLQETSPLRDAVVIEQSSSLNEASSGLFDVFLRFM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TPHLTHAKTFLRTLVRGVPBYGCVVNLRKTVVNFPVEDBALGGTAFVQMPAHGLFPWCGL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TPHITHAKTFLKTLVRGVPEYGCVVNLRKTVVNFPVEDEALGGTAFVQMPAHGLFPWCGL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      LLDTRILEVQSDYSSYARTSIRASLTFNRGFKAGRNMRRKLFGVLRLKCHSLFLDLQVNS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          LLDTRILEVQSDYSSYARTSIRASLIFNRGFKAGRNMRRKLFGVLRLKCHSLFLDLQVNS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          LQTVCTNIYKILLLQAYRFHACVLQLPFHQQVWKNPTFFLRVISDTASLCYSILKAKNAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   634 VNMDYVVGARTFRREKRAERLTSRVKALFSVLNYERARRPGLLGASVLGLDDIHRAWRTF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             HVRKAFKSHVSTLTDLOPYMRQFVAHLQETSPLRDAVVIEQSSSLNEASSGLFDVFLRFM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CHHAVRIRGKSYVQCQGIPQGSILSTLLCSLCYGDMBNKLFAGIRRDGLLLRLVDDFLLV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              New polypeptides derived from human telomerase reverse transcriptase, useful in preparing a medicament for treating or preventing cancer, o preparing a diagnostic for diagnosing cancer, e.g. breast cancer or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ;
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match 43.2%; Score 2576; DB 6; I
Best Local Similarity 100.0%; Pred. No. 1.2e-207;
Matches 499; Conservative 0; Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ALEAAANPALPSDFKTILD 1132
                                                                                                                                                   Disclosure; Fig 2; 56pp; English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ALEAAANPALPSDFKTILD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence 499 AA;
                                                                                            prostate cancer.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1054
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             754
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            814
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    874
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      934
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          994
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              241
```

```
120
                                                                        255
                                                                                                                         295
                                                                                                 235
                                                                                                                                                                                                                           406
                                                                                                                                                                                                                                                                             458
                                                                                                                                                                                                                                                                                                                                                      512
                                                                                                                                                                                                                                                                                                                                                                                                        572
                                                                                                                                                                                                                                                                                                                                                                                                                                637
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  752
                                                                                                                                                                                                                                                                                                                             517
                                                                                                                                                                                                                                                                                                                                                                              577
                                                                                                                                                                                                                                                                                                                                                                                                                                                         632
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 695
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         692
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 812
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1109
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   872
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                989
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1049
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AAY25462
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     RESULT
                                       g
              8
                                                                      8
                                                                                            셤
                                                                                                                     8
                                                                                                                                             g
                                                                                                                                                                         ò
                                                                                                                                                                                              Вb
                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                        8
                                                                                                                                                                                                                                                                                              임
                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                          ઠે
                                                                                                                                                                                                                                                                                                                                                                                                a
                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          음
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             This invention relates to a novel composition for inducing a reversible state of a continual growth in cultured cells and comprises at least one compound comprising a cyclin dependent kinase (cdk, cdk2 or cdk6 computed or compound comprised a cyclin dependent kinases (cdk, cdk2 or cdk6 protein having an activating mutation. Growth and division of living cells involve a regular series of events and processes that comprise the cells involve a regular series of events and processes that comprise the control of G1, the point at which cells irrevocably commit to DNA synthesis and thus enter the cell cycle. The invention is useful in reversibly inducing continual growth in normal cells and may allow the correcting of cancer-causing agents with the continual growth-induced cells. The present sequence is that of the frog TERT protein, the catalytic subunit of telomerase, related to the invention. Note: Due to an error in the sequence is listing, the Seq ID numbers given in the disclosure do not correspond to those given in the sequence listing. It is therefore unclear which Seq ID number corresponds to which sequence and exactly which sequence is being claimed.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 117
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           118 SVRSYLPNTVTDALRGSGAWGLLLRRVGDDVLVHLLARCALFVLVAPSCAYQVCGPPLY- 176
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A composition for reversibly inducing continual growth in normal cells comprises a cyclin dependent kinase protein (e.g. cdk4, cdk2 or cdk6) or its active fragment, derivative, homolog or analog, having an activating
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 -- PPPHASGPRRIGCERAWNHSVRE 209
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          59
                                                                                                                                         continual growth; cultured cell; cyclin dependent kinase; cdk4; cdk2; cdk6; activating mutation; cell growth; cell division; cell cycle; cancer-causing agent; continual growth-induced cell; enzyme; TERT; telomerase; frog.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           VPWDARPPPAAPSFRQVSCLKELVARVLQRLCERGAKNVLAFGFALLDGARGGPPEAFTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Indels 120;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Length 1131;
                                                                                                                     cell growth.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match 37.9%; Score 2260; DB 7; )
Best Local Similarity 43.0%; Pred. No. 1.5e-180;
Matches 500; Conservative 189; Mismatches 354;
                                                                                                                     continual
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Claim 12; Page 116-119; 77pp; English.
                                        ADD21415 standard; protein; 1131 AA
                                                                                                                                                                                                                                                                                                                                                              ₹
                                                                                                                  Frog TERT protein related to
                                                                                                                                                                                                                                                                                 15-NOV-2002; 2002WO-US036729.
                                                                                                                                                                                                                                                                                                          15-NOV-2001; 2001US-0334760P
                                                                                                                                                                                                                                                                                                                                                               Mettus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               --QLGAATQAR-
                                                                                         (first entry)
                                                                                                                                                                                                                                                                                                                                                            Rane SG,
                                                                                                                                                                                                                                                                                                                                                                                   WPI; 2003-449813/42.
                                                                                                                                                                                                                                                                                                                                 (UTEM ) UNIV TEMPLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sequence 1131 AA;
                                                                                                                                                                                                                               WO2003044169-A2.
                                                                                                                                                                                                       Xenopus laevis
                                                                                        15-JAN-2004
                                                                                                                                                                                                                                                        30-MAY-2003
                                                                                                                                                                                                                                                                                                                                                           PE,
                                                               ADD21415;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             28
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    9
                                                                                                                                                                                                                                                                                                                                                           Reddy
               RESULT 64
                           ADD21415
                                        유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
```

990 QVNSLQTVCTNIYKILLLQAYRFHACVLQLPFHQQVWKNPTFFLRVISDTASLCYSILKA 1049 1050 KNAGMSLGAKGAAGPLPSEAVQWLCHQAFLLKLTRHRVTYVPLLGSLRTAQTQLSRKLPG 1109 LPSDDVFLFQSQSFTQSNVLLRYIKRNVFHLRKKYLKPKHSMTSRM-----LTWRRNKSP 174 294 353 295 INASV-----PTAQSR-----LSFSNIFIDFGRTLYLSISYKKGFSESFILNSLDST 341 405 457 451 516 511 576 571 636 694 631 691 751 LDFEKPQVEKLQFYFVKTDVKGAYDTIPHSKLDEVISKVINPNANEVYCIRRYATVSVDP 751 811 871 LVTPHLTHAKTFLRTLVRGVPEYGCVVNLRKTVVNFPVED--EALGGTAFVQMPAHGLFP 929 930 WCGLLLDTRTLEVQSDYSSYARTSIRASLTFNRGFKAGRNMRRKLFGVLRLKCHSLFLDL 989 811 871 175 SGLLIRSKTSMAVTTEIHSKRKLCSKDICVIPDKKRRDNLDKDDTVDHFDLPMCRSVSYL SHPSVGRQHHAGPPSTSRPPRPWDTPCPPVYAETKHFLY-SSGDKEQLRPSFLLSSLRPS | : | : | : | : | : | SNMYPKTNVQVTGLITSGYKKTKTPQCQKPVSCEQKKTTAFYSVAGDCNLSLKDNVNKLI GVLLKTHCPLRAAVTPAAGVCAREKPQGSVAAPEEED-----TDPRRLVQLLRQHSS 452 IWQVYMFVRECLNNVVPDIMWGSSHNKCRFFRNVKSFLFFSGKFGKISLSELMMSMRVED CAWLRRSPGVGCVPAAEHRLREEILAKFLHWLMSVYVVELLRSFFYVTETTFOKNRLFFY DYVVGARTFR--REKRAERLTSRVKALFSVLNYERARRPGLLGASVLGLDDJHRAWRTFV 354 LTGARRLVETIFLGS------RPWMPGTPRRLPRLPQRYWQMRPLFLELLGNHAQCPY PWQVYGFVRACLRRLVPPGLWGSRHNERRFLRNTKKFISL-GXHAKLSLQELTWKMSVRD RKSVWSKLQSIGIRQHLKRVQLRELSBAEVRQHREARPALLTSRLRFIPKPDGLRPIVNM SSTLSSQQSKENQEKKIHHFSSQIRNLFSVLNYEWNRNCSLIGSSVFGMDDIYKKWKKFV LRV-RAQDPPPELYFVKVDVTGAYDTIPQDRLTEVIASIIKP--QNTYCVRRYAVVQKAA HGHVRKAFKSHVSTLTDLOPYMROFVAHLQETSPLRDAVVIEQSSSLNEASSGLFDVFLR FMCHHAVRIRGKSYVQCQGIPQGSILSTLLCSLCYGDMENKLFAGIRRDGLLLRLVDDFL SWAHPGR-----TRG-PSDRGFCVVSPARPAEEATSLEGALSGTRH-AGVPLGLPAPGARRRGGSASRSL-----PLPKRPRRGAAPE----1110 TTLTALEAAANPALPSDFKTILD 1132 |: |: |: | |- |: | DTIELLKSVTDSSLHKDFSCIMD 1131

```
ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         The present sequence represents a splice variant of a fragment of human telomerase reverse transcriptase (hTERT). The specification describes peptides derived from hTERT, which are capable of inducing a T cell response and are used in medicine. The hTERT peptides and nucleic acids encoding them are useful in preparing a medicament, which is a vaccine, an antisense molecule, or is capable of generating an antisense molecule in vivo, for treating cancer, or in preparing a diagnostic for diagnosing cancer. The cancer is, for example, breast cancer, prostate cancer, pancreatic cancer, colo-rectal cancer, lung cancer, malignant melanoma, leukemia, lymphoma, ovarian cancer, cervical cancer, or a biliary tract
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  'n
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    693
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           694 VLRVRAQDPPPELYFVKVDVTGAYDTIPQDRLTEVIASIIKPQNTYCVRRYAVVQKAAHG 753
                                                                                                                                                                                                                                                                                                                                                                                                                           Human; telomerase reverse transcriptase; hTERT; T cell response; vaccine;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1 VNMDYVVGARTFRREKRAERLISRVKALFSVLNYERARRPGLLGASVLGLDDIHRAWRTF 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ö
                     LEFMCHHAVRIRGKSYVQCQGIPQGSILSTLLCSLCYGDMENKLFAGIRRDGLLLRLVDD
                                                                                            FLLVTPHLTHAKTFLRTLVRGVPEYGCVVNLRKTVVNFPVEDEALGGTAFVQMPAHGLFP
LRFMCHHAVRIRGKSYVQCQGIPQGSILSTLLCSLCYGDMENKLFAGIRRDGLLLRLVDD
                                                                        FLLVTPHLTHAKTFLRTLVRGVPEYGCVVNLRKTVVNFPVEDEALGGTAFVOMPAHGLFP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      VNMDYVVGARTFRREKRAERLTSRVKALFSVLNYERARRPGLLGASVLGLDDIHRAWRTF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    useful in preparing a medicament for treating or preventing cancer, preparing a diagnostic for diagnosing cancer, e.g. breast cancer or
                                                                                                                                                                                                                                                                                                                                                                                      Splice variant of a human telomerase reverse transcriptase fragment.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Length 436;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                polypeptides derived from human telomerase reverse
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Saeboe-Larssen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Score 2181; DB 6;
Pred. No. 1.8e-174;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            al Similarity 100.0%; Pred. No. 1.8 421; Conservative 0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Moller M,
                                                                                                                                                                                                                                                                            Ā.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Disclosure, Fig 2; 56pp; English.
                                                                                                                                                                                                                                                                          ABB99680 standard; protein; 436
                                                                                                                                              947
                                                                                                                                                                                  437
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              16-MAY-2002; 2002WO-NO000176.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  21-MAY-2001; 2001GB-00012342
                                                                                                                                                                   WCGLLLDTRTLEVQSDYS
                                                                                                                                                WCGLLLDTRTLEVQSDYS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gaudernack G,
                                                                                                                                                                                                                                                                                                                                                     (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              WPI; 2003-129380/12.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     (GEMV-) GEMVAX AS.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          prostate cancer.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Sequence 436 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       WO200294312-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Homo sapiens
                                                                                                                                                                                                                                                                                                                                                   28-MAR-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         JA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           28-NOV-2002
810
                                    300
                                                                        870
                                                                                                         360
                                                                                                                                              930
                                                                                                                                                                                  420
                                                                                                                                                                                                                                                                                                                 ABB99680;
                                                                                                                                                                                                                                                                                                                                                                                                                                                cancer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Matches
                                                                                                                                                                                                                                        RESULT
                            ద
                                                                                                 a
                                                                                                                                              à
                                                                                                                                                                                                                                                                                                셤
                                                                        ઠે
                                                                                                                                                                              8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        809
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             629
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        689
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             WRTFVLRVRAQDPPPELYFVKVDVTGAYDTIPQDRLTEVIASIIKPQNTYCVRRYAVVQK 749
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             299
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    vel gene, useful in detection of telomerase activity and cancer cells well as screening telomerase inhibitors for treatment of cancers.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      510 WKMSVRDCAWLRRSPGVGCVPAAEHRLREEILAKFLHWLMSVYVVELLRSFFYVTETTFQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         570 KNRLFFYRKSVWSKLQSIGIRQHLKRVQLRELSEAEVRQHREARPALLTSRLRFIPKPDG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    60 KNRLFFYRKSVWSKLOSIGIRQHLKRVQLRELSEAEVRQHREARPALLTSRLRFIPKPDG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        LRPIVNMDYVVGARTFRREKRAERLTSRVKALFSVLNYERARRPGLLGASVLGLDDIHRA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          WRIFVLRVRAQDPPPELYFVKVDVIGAYDIIPQDRLIEVIASIIKPQNIYCVRRYAVVQK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          750 AAHGHVRKAFKSHVSTLTDLQPYMRQFVAHLQETSPLRDAVVIEQSSSLNEASSGLFDVF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           proteins containing a reverse transcriptase motif, which act as telomerase inhibitors. The gene, its encoded protein and derived antibodies can be used to provide base sequence information, detect telomerase activity and cancer cells, and to screen telomerase inhibitors. The detection method is simple and effective
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            This invention describes novel human CRT-1 genes and their encoded
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      4,
                                                                                                                                              inhibitor; detection;
                                                                                                                                                                                                                                                                                                no stop codon given"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length 438;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Indels
                                                                                                                                            CRT-1; reverse transcriptase; telomerase; inhibitor telomerase activity; cancer cell; screening; human.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           36.6%; Score 2184; DB 2;
97.0%; Pred. No. 9.8e-175;
cive 3; Mismatches 6;
                                                                                                                                                                                                                                                       1. 438
/label= CRT-1
/note= "Partial sequence,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Example 1; Page 35-36; 44pp; Japanese.
                                                                                                                                                                                                                                        cocation/Qualifiers
AAY25462 standard; protein; 438
                                                                                                                                                                                                                                                                                                                                                                                                                                            98JP-00013232.
                                                                                                                                                                                                                                                                                                                                                                                                         99WO-JP000039
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                98JP-00139177
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     (CHUS ) CHUGAI SEIYAKU KK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Conservative
                                                                                                         Human CRT-1 protein #2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Yoshida
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              WPI; 1999-430393/36.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               N-PSDB; AAX88250.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence 438 AA;
                                                                                                                                                                                                     Homo sapiens
                                                                                                                                                                                                                                                                                                                                W09935261-A1
                                                                                                                                                                                                                                                                                                                                                                                                         38-JAN-1999;
                                                                       22-SEP-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                06-MAY-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                              08-JAN-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Best Local Simi
Matches 425;
                                                                                                                                                                                                                                                                                                                                                                     15-JUL-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                               30-JAN-1998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Isuchiya M,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 690
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        530
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
                                                                                                                                                                                                                                                         Protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Novel
```

8

8 8

品 品 品 品

ò

움 ò 셤 ò g à g ò a

```
ö
                                                                                                                                                                                                      753
                                                                                                                                                                                                                                                      813
                                                                                                                                                                                                                                                                     873
                                                                                                                                                                                                                                                                                                                                            240
                                                                                                                                                                                                                                                                                                                                                                         933
                                                                                                                                                                                                                                                                                                                                                                                       LLDTRTLEVQSDYSSYARTSIRASLTFNRGFKAGRNMRRKLFGVLRLKCHSLFLDLQVNS 993
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        LQTVCTNIYKILLLQAYRFHACVLQLPFHQQVWKNPTFFLRVISDTASLCYSILKAKNA 1052
                                                                                                                                                            9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        419
                                                                                                                                              694 VLRVRAQDPPPELYFVKVDVTGAYDTIPQDRLTEVIASIIKPQNTYCVRRYAVVQKAAHG
                                                                                                                                                                                                                                                                                                                                CHHAVRIRGKSYVQCQGIPQGSILSTLLCSLCYGDMENKLFAGIRRDGLLLRLVDDFLLV
                                                                                                                                                                                                                                                                                                                                                                                                                                                    LITTITITION SON SSYARTSIRASLTFURGERAGRUMRRKLFGVLRLKCHSLFLDLQVNS
                                                                                                                           634 VNMDYVVGARTFRREKRAERLTSRVKALFSVLNYERARRPGLLGASVLGLDDIHRAWRTF
                                                                                                                                                                                                                                                  HVRKAFKSHVSTLTDLQPYMRQFVAHLQETSPLRDAVVIEQSSSLNEASSGLFDVFLRFM
                                                                                                                                                                                                                                                                                                            CHHAVRIRGKSYVQCQGIPQGSILSTLLCSLCYGDMENKLFAGIRRDGLLLRLVDDFLLV
                                                                                                                                                                                                                                                                                                                                                                     TPHLTHAKTFLRTLVRGVPEYGCVVNLRKTVVNFPVEDEALGGTAFVQMPAHGLFPWCGL
                                                                                                    Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CRT-1; reverse transcriptase; telomerase; inhibitor; detection; telomerase activity; cancer cell; screening; human.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /note= "Partial sequence, no stop codon given"
                                                                       Length 463;
                                                                                                Indels
                                                                   36.4%; Score 2170; DB 6; L
100.0%; Pred. No. 1.6e-173;
iive 0; Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AAY25461 standard; protein; 437
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        98JP-00013232.
98JP-00033584.
98JP-00139177.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1. .437
/label= CRT-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               99WO-JP000039
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (CHUS ) CHUGAI SEIYAKU KK
                                                                                                Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Human CRT-1 protein #1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                reuchiya M, Yoshida K;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            WPI; 1999-430393/36.
N-PSDB; AAX88243.
                                                              Query Match
Best Local Similarity
Matches 419; Conserv
                                       Sequence 463 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         22-SEP-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              08-JAN-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    WO9935261-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          08-JAN-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         30-JAN-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 15-JUL-1999
          carcinoma
                                                                                                                                                                                                                                                  754
                                                                                                                                                                                                                                                                                                            814
                                                                                                                                                                                                                                                                                                                                                                    874
                                                                                                                                                                                                                                                                                                                                                                                                                                                          301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AAY25461;
                                                                                                                                                                                                                                                                                                                                        181
                                                                                                                                                                                                                                                                                                                                                                                                                               934
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         994
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Key
Protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AAY25461
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RESULT
         ប្ដង្គន
                                                                                                                                                       g
                                                                                                                                                                                     ò
                                                                                                                                                                                                                 요
                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                     ВЪ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                8
                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                      LQTVCTNIYKILLLQAYRFHACVLQLPFHQQVWKNPTFFLRVISDTASLCYSILKAKNAG 1053
61 VLRVRAQDPPFELYFVKVDVTGAYDTIPQDRLTEVIASIIKPQNTYCVRRYAVVQKAAHG 120
                                                                180
                                                                                            873
                                                                                                                         240
                                                                                                                                                       933
                                                                                                                                                                    993
                                                                                                                                                                                                                                                                                       The present sequence represents a splice variant of a fragment of human telomerase reverse transcriptase (hTERT). The specification describes peptides derived from hTERT, which are capable of inducing a T cell response and are useful in preparing a medicament, which is a vaccine, an antisense molecule, or is capable of generating an antisense molecule in vivo, for treating cancer, or in preparing a diagnostic for diagnosing in vivo, for cancer is, for example, breast cancer, prostate cancer, pancreatic cancer, colo-rectal cancer, lung cancer, malignant melanoma, leukemia, lymphoma, ovarian cancer, cervical cancer, or a biliary tract
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Human; telomerase reverse transcriptase; hTERT; T cell response; vaccine;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 or in
                                             CHHAVRIRGKSYVQCQGIPQGSILSTLLCSLCYGDMENKLFAGIRRDGLLIRLVDDFLLV
                             HVRKAFKSHVSTLTDLQPYMRQFVAHLQETSPLRDAVVIEQSSSLNEASSGLFDVFLRFM
                                                                                       CHHAVRIRGKSYVQCQGIPQGSILSTLLCSLCYGDMENKLFAGIRRDGLLLRLVDDFLLV
                                                                                                                                                 TPHLTHAKTFLRTLVRGVPEYGCVVNLRKTVVNFPVEDEALGGTAFVQMPAHGLFPWCGL
                                                                                                                                                                                                            LLDTRTLEVQSDYSSYARTSIRASLTFNRGFKAGRNMRRKLFGVLRLKCHSLFLDLQVNS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            New polypeptides derived from human telomerase reverse transcriptase, useful in preparing a medicament for treating or preventing cancer, o preparing a diagnostic for diagnosing cancer, e.g. breast cancer or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Splice variant of a human telomerase reverse transcriptase fragment.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Saeboe-Larssen S;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Moller M,
                                                                                                                                                                                                                                                                                                                                                                                                                                      ABB99679 standard; protein; 463 AA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Disclosure; Fig 2; 56pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           16-MAY-2002; 2002WO-NO000176
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         21-MAY-2001; 2001GB-00012342
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaudernack
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               WPI; 2003-129380/12.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (GEMV-) GEMVAX AS
                                                                                                                                                                                                                                                                                                                                M 1054
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           prostate cancer
                                                                                                                                                                                                                                                                                                                                                               M 421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Homo sapiens.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              28-MAR-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             28-NOV-2002,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Eriksen JA,
                                                                                                                     181
                                                           121
                                                                                       814
                                                                                                                                                  874
                                                                                                                                                                               241
                                                                                                                                                                                                            934
                                                                                                                                                                                                                                          301
                                                                                                                                                                                                                                                                        994
                                                                                                                                                                                                                                                                                                    361
                                                                                                                                                                                                                                                                                                                                 1054
                                                                                                                                                                                                                                                                                                                                                              421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ABB99679;
```

cancer

ABB99675

g

ò 셤

ò

```
The invention relates to a novel method for eliciting an immune response in a mammalian subject that is specific for its own telomerase reverse transcriptase (TERT), comprising administering an immunogenic composition containing a protein with a least 20 consecutive amino acids of TERT of another mammalian species, or a nucleic acid encoding the protein. A activity. The protein of the invention has cytostatic, and immunostimulant activity. The protein or the nucleic acid encoding the protein is useful in the manufacture of a medicament for the treatment of cancer in a human or for eliciting a cytotoxic T cell response in a human.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DARPPPAAPSFRQVSCLKELVARVLQRLCERGAKNVLAFGFALLDGARGGPPEAFTTSVR 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SYLPNTVTDALRGSGAWGLLLRRVGDDVLVHLLARCALFVLVAPSCAYQVCGPPLYQLGA 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG 300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     561 FYVTETTFQKNRL-------FFYRKSVWSKLQS------IGIRQHL-KRVQLR 599
                                                                                                                                                       Eliciting an immune response in a mammal specific for its own telomeras reverse transcriptase (TERT), useful for treating or preventing cancer, comprises administering a composition containing TERT of another
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        -GARKLVETIFLGSAPQKPGAARRAFRLPARYMRMRPLFQELLGNHARCPYRALLRTHCP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SYLPNIVTETLRGSGAWGLLLRRVGDDVLTHLLARCALYLLVAPSCAYQVCGPP----S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ATQARPPHASGPRRRLGCERAWNHSVREAGVPLGLPAPGARRRGGSASRSLPLPKRPRR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GS---PERSSGSASQWRSRRRHR-PS------QATAPVASRVYTCRALPQLA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             RACLRRLVPPGLWGSRHNERRFLRNTKKFISLGKHAKLSLQELTWKMSVRDCAWLRRSPG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               MPRAPRCRAVRSLLRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              153 TTSAPPPLCRSRPRS--------PLPAPRSAGRARDLRPTRQARTRPAR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ROHHAGPPSTSR-----PPRPWDTPCPPVYAETKHFLYSSGDKEQLRPSFLLSSLRPSL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    WE--GGPPDSSNHPSLDTSPGPQGVPHDPAHPETKRFLYCSGGRERLRPSFLLSALPPTL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           LRAAVTP-----AAGVCAREKPOGSVAAPEEEDTDPRRLVQLLRQHSSPWQVYGFV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ------VP---AAEHRLREEILAKFLHWLMSVYVVELLRSF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 EECRVSRCLVGLQEGPGSQPECGRPLPPNHPSEH-----PFLCWAGS-DCPACLSAP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TGARRLVET1FLGSRPWMPGTPRRLPRLPQRYWQMRPLFLELLGNHAQCPYGVLLKTHCP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length 743;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           36.3%; Score 2166.5; DB 8; 56.7%; Pred. No. 6.2e-173; iive 63; Mismatches 151;
                                                                      Ŋ,
                                                                                                                                                                                                                                              Claim 10; SEQ ID NO 10; 44pp; English
                                                                    Σ
                                                                      Frolkis
27-JUN-2002; 2002US-0393295P
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             467; Conservative
                                                                      IA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Ferber
                                                                                                      WPI; 2004-071946/07
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Similarity
                                                                                                                                                                                                             mammalian species.
                                                                                                                         N-PSDB; ADG90606
                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sequence 743 AA;
                                                                      Majumdar A,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         98
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     236
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      294
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           353
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    469
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 194
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        355
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           415
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             466
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                409
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                526
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Best Loca
Matches
 원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  윱
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 윱
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          임
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                  ä
                                                                                                                                                                                                                                                                                                                                                                                                        629
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               749
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          689
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  809
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    299
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       869
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         929
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          418
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           dog; immune response; telomerase reverse transcriptase; TERT; cytostatic; immunostimulant; cancer; cytotoxic T cell response.
                                                                                                                                                                                                                                                                                                                                                                   59
                   cells
                                                                                                                                                                                                                                                                                                                                                                   4 WRLTRRAVILAR ---- VGCVPAAEHRLREEILAKFLHWLMSVYVVELLRSFFYVTETTFO
                                                                                                                                                                                                                                                                                                                                                                                                        KNRLFFYRKSVWSKLQSIGIRQHLKRVQLRELSEAEVRQHREARPALLTSRLRFIPKPDG
                                                                                                                                                                                                                                                                                                                                                                                                                                        KNRLFPYRKSVWSKLQSIGIRQHLKRVQLRELSEAEVRQHREARPALLTSRLRFIPKPDG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          LRPIVNMDYVVGARTFRREKRAERLTSRVKALFSVLNYERARRPGLLGASVLGLDDIHRA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              LRPIVNMDYVVGARTFRREKRAERLTSRVKALFSVLNYERARRPGLLGASVLGLDDIHRA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AAHGHVRKAFKSHVSTLTDLQPYMRQFVAHLQETSPLRDAVVIEQSSSLNEASSGLFDVF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       LRFMCHHAVRIRGKSYVQCQGIPQGSILSTLLCSLCYGDMENKLFAGIRRDGLLLRLVDD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           LRFMCHHAVRIRGKSYVQCQGIPQGSILSTLLCSLCYGDMENKLFAGIRRDGLLLRLVDD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PLLVTPHLTHAKTFLRTLVRGVPEYGCVVNLRKTVVNFPVEDEALGGTAFVQMPAHGLFP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            F-LVTPHLTHAKTFLRTLVRGVPEYGCVVNLRKTVVNFPVEDEALGGTAFVQMPAHGLFP
                                                                                                                                                                                                                                                                                                                                   WKMSVRDCAWLRRSPGVGCVPAAEHRLREEILAKFLHWLMSVYVVELLRSFFYVTETTFQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             WRTFVLRVRAQDPPPELYFVKVDVTGAYDTIPQDRLTEVIASIIKPQNTYCVRRYAVVQK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AAHGHVRKAFKSHVSTLTDLQPYMRQFVAHLQETSPLRDAVV1EQSSSLNEASSGLFDVF
                                                                                                                                                                                                                                                                                                  Gaps
                  of telomerase activity and cancer ce inhibitors for treatment of cancers.
                                                                                                                     proteins containing a reverse transcriptase motif, which act as telomerase inhibitors. The gene, its encoded protein and derived antibodies can be used to provide base sequence information, detect telomerase activity and cancer cells, and to screen telomerase inhibitors. The detection method is simple and effective
                                                                                                                                                                                                                                                                                                  ŝ
                                                                                                                                                                                                                                                                437;
                                                                                                      and their
                                                                                                                                                                                                                                                                Length
                                                                                                                                                                                                                                                                                                  Indels
                                                                                                                                                                                                                                                                5
                                                                                                                                                                                                                                                            Score 2169.5; DB 2;
Pred. No. 1.6e-173;
3; Mismatches 6;
                                                                                                      CRT-1 genes
                                                                                                     invention describes novel human
                                                                    Page 31-32; 44pp; Japanese
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ź
                  detection
telomerase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     standard; protein; 743
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            947
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             WCGLLLDTRTLEVOSDYS 436
                                                                                                                                                                                                                                                              36.4%;
96.8%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     24-JUN-2003; 2003WO-US019844
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            WCGLLLDTRTLEVQSDYS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (first entry)
                                                                                                                                                                                                                                                                                                 Conservative
                ij
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ID NO:10
                                  screening
                                                                                                                                                                                                                                                                               Similarity
                                                                                                                                                                                                                              Sequence 437 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TERT SEQ
                vel gene,
                                                                                                                                                                                                                                                                                                 424;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        25-MAR-2004
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  08-JAN-2004
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       810
                                                                    Claim 2;
                                                                                                                                                                                                                                                                                                                                     510
                                                                                                                                                                                                                                                                                                                                                                                                        570
                                                                                                                                                                                                                                                                                                                                                                                                                                        9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  750
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            930
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ADG90607
                                                                                                                                                                                                                                                              Query Match
                                                                                                                                                                                                                                                                                Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Canis
                  Novel
                                                                                                                                                                                                                                                                                                 Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Dog
                                  aB
```

ઠ 셤 ò ద ò g ò 셤 ð 셤 δ a 8 g ò 셤

9

Gaps

143;

97

414 352 465 408 525 468

```
Matches 433; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Rat TERT SEQ ID NO:8.
                                                                                                                                                  Local Similarity
                                                                                                                       Sequence 564 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TPCH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             25-MAR-2004
                                                                                                                                                                                                                                                                                                                                                                                                                            300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1029
                                                                                                                                                                                                                 609
                                                                                                                                                                                                                                                                                            729
                                                                                                                                                                                                                                                                                                              181
                                                                                                                                                                                                                                                                                                                                                                      849
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         475
                                                                                                                                                                                                                                    61
                                                                                                                                                                                                                                                        699
                                                                                                                                                                                                                                                                        121
                                                                                                                                                                                                                                                                                                                                                  211
                                                                                                                                                                                                                                                                                                                                                                                                         606
                                                                                                                                                                                                                                                                                                                                                                                                                                              696
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     420
                                                                                                                                        Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ADG90605;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     RESULT 71
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ADG90605
$$$$$$$$$$$$$$$$$$
                                                                                                                                                                              à
                                                                                                                                                                                            셤
                                                                                                                                                                                                                ઠે
                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                      ð
                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                              à
                                                                                                                                                                                                                                                                                                                                               유
                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                        à
                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                             ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        8
        579
                                                                       TLFSVLNYERARRPSLLGASMLGMDDIHRAWRTFVLRIRAQNPAPQLYFVKVDVTGAYDA 699
                                                                                                                                                                                                                                           1; telomerase reverse transcriptase; hTRT; TRT; diagnosis; prognosis; proliferation; cancer; ageing; ribonucleoprotein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                clone protein from the present invention. The present invention also describes the following methods: (A) determining whether a test compound is a modulator of hTRT, by detecting the change in hTRT recombinant protein or polymucleotide, on administration of the compound; (B) preparation of recombinant telomerase by contacting a protein preparation of hTRT with a telomerase RNA component; (C) detection of the hTRT RNA or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Pure and recombinant human Telomerase Reverse Transcriptase and its variants - are useful in the diagnosis, prognosis and treatment of cell proliferation conditions especially cancer and ageing.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         present sequence is a human telomerase reverse transcriptase (hTRT)
    RLPSQTSPHPQRLPGCPHLLPGVMRHHEMSSWWRPSSPYPGHTWLLIGCAPQLFNSVHLR
                       ELSEAEVRQHREARPALLTSRLRFIPKPDGLRPIVNMDYVVGARTFRREKRAERLTSRVK
                                  ALFSVLNYERARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDPPPELYFVKVDVTGAYDT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GB;
                                                                                                                                                                                                                        Human telomerase reverse transcriptase 63 kDa clone 712562 protein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Harley
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Morin GB,
                                                                                                720 IPODRLTEVIASIIKPQ-NIYCVRRYAVVQKAAHGHVRKAFKSH
                                                                                                           Chapman KB,
                                                                                                                                                                                                                                                                                                                     /label= encoded by ARG
                                                                                                                                                                                                                                                                                                  Location/Qualifiers
                                                                                                                                                                   Ź
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ļ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Example 1; Fig 68; 387pp; English
                                                                                                                                                                AAW56109 standard; protein; 564
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Nakamura
                                                                                                                                                                                                                                                                                                                                                                                          96US-00724643.
97US-00844419.
97US-00846017.
97US-00851843.
97US-00854050.
                                                                                                                                                                                                                                                                                                                                                                            97GB-00020890
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         UNIV TECHNOLOGY CORP.
                                                                                                                                                                                                                                                                                                                                                                                                                                                    97US-00912951
97US-00915503
                                                                                                                                                                                                     (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Lingner J,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     WPI; 1998-171633/16.
N-PSDB; AAV22426.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GERON CORP
                                                                                                                                                                                                                                                                                                  Key
Misc-difference
                                                                                                                                                                                                                                                                                Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                          01-OCT-1996;
18-APR-1997;
25-APR-1997;
                                                                                                                                                                                                                                                                                                                                                                          01-OCT-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                            14-AUG-1997;
                                                                                                                                                                                                                                                                                                                                     GB2317891-A
                                                                                                                                                                                                                                                                                                                                                         08-APR-1998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MΗ
                                                                                                                                                                                                                                                                                                                                                                                                                                           14-AUG-1997
                                                                                                                                                                                                                                                                                                                                                                                                                         06-MAY-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                 09-MAY-1997
                                                                                                                                                                                                                                                                      Synthetic
                                                            099
                                          580
     520
                       900
                                                                              640
                                                                                                                   700
                                                                                                                                                                                   AAW56109
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Cech TR,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (GERO-)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (UYTE-)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Andrews
                                                                                                                                                                                                                                           Human;
                                                                                                                                                                                                                                                    cell
                                                                                                                                             RESULT 70
                                                                                                                                                               ò
                                                                            셤
                       ò
                                         셤
                                                                                                 ò
```

```
protein in a sample by binding a relevant probe to the sample and detecting the complex formed or in the case of RNA detection, amplifying the preduct and correlating the presence of complex or amplification product and correlating the presence of complex or amplification product with presence of hTRT in the sample; and (D) increasing the proliferation of a vertebrate cell by increasing hTRT expression; and (E) proliferation to create a medicament that inhibits ageing. A protein preparation of hTRT and the polynucleotide encoding hTRT can be used in the manufacture of medicaments for inhibiting the effect of ageing or cancer. Inhibitors of telomerase activity can be used to treat conditions that are associated with high telomerase activity. A protein preparation of hTRT can also be used in the new methods
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      7;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1028
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              908
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      299
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     359
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             419
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     728
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    IASIIKPONTYCVRRYAVVOKAAHGHVRKAFKSHVSTLTDLQPYMRQFVAHLQETSPLRD 788
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            848
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                968
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               474
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                rat; immune response; telomerase reverse transcriptase; TERT; cytostatic; immunostimulant; cancer; cytotoxic T cell response.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MENKLPAGI RRDGLLLRLVDDPLLVTPHLTHAKTFLRTLVRGVPEYGCVVNLRKTVVNFP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          240 MENKLFAGIRRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVFEYGCVNNLRRTVVNFP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               VEDEALGGTAFVQMPAHGLFPWCGLLLDTRTLEVQSDYSSYARTSIRASLTFNRGFKAGR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              360 NWRRKLFGVLRLKCHSLFLDLQVNSLQTVCTNIYKILLLQAYRFHACVLQLPFHQQVWKN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             HREARPALLTSRLRF1PKPDGLRPIVNMDYVVGARTFRREKRAERLTSRVKALFSVLNYE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               RARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDPPPBLYFVKVDVTGAYDTIPQDRLTEV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          -----SRATSYVQCQGIPQGSILSTELCSLCYGD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NWRRKLFGVLRLKCHSLFLDLQVNSLQTVCTN1 YK1 LLLLQAYRFHACVLQLPFHQQVWKN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PHF----SCASSLTRLPLLLHPESQERRDVAGGGGRRRPSALRGRAVAVPPSIPAQADS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           549 MSVYVVELLRSFFYVTETTFOKNRLFFYRKSVWSKLOSIGIRQHLKRVQLRELSEAEVRQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AVVIEQSSSINEASSGLFDVFLRFMCHHAVRIRGKSYVQCQGIPQGSILSTLLCSLCYGD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          VEDEALGGTAFVQMPAHGLFPWCGLLLDTRTLEVQSDYSSYARTSIRASLTFNRGFKAGR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gapa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1072 WLCHQAFILKLTRHRVTYVPLLGSLRTAQTQLSRKLPGTTLTALEAAANPALPSD 1126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Indels 112;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           IASIIKPONTYCVRRYAVVOKAAMG------TSARP-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                            Length 564;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      38;
                                                                                                                                                                                                                                                                                                                                                                                                                                                  35.0%; Score 2088; DB 2; 72.8%; Pred. No. 1.7e-166; iive 12; Mismatches 38;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ADG90605 standard; protein; 575
```

```
This sequence is a truncated human telomerase of the invention. Primers that amplify the telomerase coding sequence can be used in a method for diagnoshing cancer in a patient. The telomerase can be used for detection, diagnoshis and drug screening. Inhibitors of telomerase activity can be used to treat cancers such as melanomas, other skin cancers, neuroblastomas, breast carcinomas, leukamias,

The control of the cancers of telomerase may be used to stimulate stem cell growths. Enhancers of telomerase may be used to stimulate stem cell could be administered in the bone marrow transplant context). As well, any tissues have stem cells. The could be administered in the bone marrow transplant context). As well, any tissues have stem cells. Proliferation of these cells may be useful to wound healing, hair growth, treatment of disease such as Wilm's tumour, organ regeneration or differentiation after injury or diseases, nerve cell or brain cell growth following injury. Note: The N-terminus of this sequence can be replaced by the sequences shown in AAY00656-Y00658
                                                                                                                                                                                                                                                                                                                                                                                      Telomerase; human; cancer; diagnosis; melanoma; skin cancer; leukaemia; neutroblastoma; breast carcinoma; colon carcinoma; orgeosarcoma; omeoth muscle cell hyperplasia; stem cell proliferation; Wilm's tumour; stem cell differentiation; organ regeneration; organ differentiation.
for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            New isolated vertebrate telomerase genes - used to develop products f
treating cancers or for organ regeneration, nerve cell or brain cell
growth following injury or bone marrow transplantation.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Indela
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    31.3%; Score 1863; DB 2;
99.7%; Pred. No. 7.6e-148;
iive 0; Mismatches 1;
                                                                  1095 SLRTAQTQLSRKLPGTTLTALEAAANPALPSDFKTILD

 protein sequence.

                                                                                                                                                                                                                   Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Claim 4; Fig 11w; 134pp; English.
                                                                                                                                                                                                                   AAY00645 standard; protein; 348
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            97US-0051410P.
97US-0053018P.
97US-0053329P.
97US-0054642P.
97US-0058287P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CAMBIA BIOSYSTEMS LLC.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      98WO-US013835
                                                                                                                                                                                                                                                                                                                                                Truncated telomerase (ver.
                                                                                                                                                                                                                                                                                                      (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Best Local Similarity 99.7
Matches 347; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Bowtell D;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              WPI; 1999-106060/09.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      N-PSDB; AAX18273
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence 348 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    WO9901560-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      01-JUL-1998;
                                                                                                                                                                                                                                                                                                      26-JUL-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              14-JAN-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 01-JUL-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       21-JUL-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         21-JUL-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 04-AUG-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   09-SEP-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Synthetic.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Kilian A,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (CAMB-)
                                                                                                                                                                                                                                     셤
                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FGVLRLKCHSLFLDLQVNSLQTVCTNIYKILLLQAYRFHACVLQLPFHQQVWKNPTFFLR 1034
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       in a mammalian subject that its specific for its own telomerase reverse transcriptase (TERT), comprising administering an immunogenic composition containing a protein with at least 20 consecutive amino acids of TERT of another mammalian species, or a nucleic acid encoding the protein. A composition of the invention has cytostatic, and immunostimulant activity. The protein or the nucleic acid encoding the protein is useful in the manufacture of a medicament for the treatment of cancer in a human or for eliciting a cytotoxic T cell response in a human.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1035 VISDTASLCYSILKAKNAGMSLGAKGAAGPLPSEAVQWLCHQAFLLKLTRHRVTYVPLLG 1094
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          677
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           914
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  361 GGAAPYQLPAHCLFPWCGLLLDTQTLEVFCDYSGYAQTSIKTSLTFQSVFKAGKTWRNKL 420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         558 RSFFYVIETTFQKNRLFFYRKSVWSKLQSIGIRQHLKRVQLRELSEAEVRQHREARPALL 617
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ASVLGLDDIHRAWRTFVLRVRAQDPPPELYFVKVDVTGAYDTIPQDRLTEVIASIIK-PQ 736
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   794
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    854
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Eliciting an immune response in a mammal specific for its own telomerase reverse transcriptase (TERT), useful for treating or preventing cancer, comprises administering a composition containing TERT of another mammalian species.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          an immune response
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   The invention relates to a novel method for eliciting an immune respons in a mammalian subject that is specific for its own telomerase reverse
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                618 TSRLRFIPKPDGLRPIVNMDYVVGARTFRREKRAERLTSRVKALFSVLNYERARRPGLLG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               NTYCVRRYAVVQKAAHGHVRKAFKSHVSTLTDLQPYMRQFVAHLQET--SPLRDAVVIEQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          241 SISMNESSSSLFDFFLHFERHSVVKIGDRCYTQCQGIPQGSSLSTLLCSLCFGDMENKLF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AGIRRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGCVVNLRKTVVNFPVEDEAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SSSINEASSGIFDVFLRFMCHHAVRIRGKSYVQCQGIPQGSILSTLLCSLCYGDMENKLF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GGTAFVQMPAHGLFPWCGLLLDTRTLEVQSDYSSYARTSIRASLTFNRGFKAGRNMRRKL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                . 9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DB 8; Length 575;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 33.8%; Score 2016; DB 8; I
67.6%; Pred. No. 2e-160;
tive 71; Mismatches 110;
                                                                                                                                                                                                                                                              2
                                                                                                                                                                                                                                                           Wang
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Claim 10; SEQ ID NO 8; 44pp; English
                                                                                                                                                                                                                                                              Frolkis M,
                                                                                                                               24-JUN-2003; 2003WO-US019844
                                                                                                                                                                         27-JUN-2002; 2002US-0393295P
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Best Local Similarity 67.6
Matches 391; Conservative
                                                                                                                                                                                                                                                              Majumdar A, Ferber IA,
                                                                                                                                                                                                                                                                                                    2004-071946/07.
                                                                                                                                                                                                                   (GERO-) GERON CORP.
      Rattus norvegicus.
                                                                                                                                                                                                                                                                                                                            N-PSDB; ADG90604.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence 575 AA;
                                                                                         08-JAN-2004
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               678
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  737
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match
```

ઠે 용 ò 셤 ઠે 원 ð 셤 ò g ઠ 셤 ઠ 셤 Š 셤

ö

셤 ò 셤 ò 셤 ò 셤 ò

ð

```
The present sequence represents a fusion protein from an example of the present invention which describes human telomerase reverse transcriptase (hTRT). The present invention also describes the following methods: (A) determining whether a test compound is a modulator of hTRT, by detecting the change in hTRT recombinant protein or polynucleotide, on administration of the compound; (B) preparation of recombinant telomerase by contacting a protein preparation of hTRT with a telomerase RNA component; (C) detection of the hTRT RNA or protein in a sample by binding a relevant probe to the sample and detecting the complex formed or in the case of RNA detection, amplification product with presence of ATRT in the sample; and (D) increasing the proliferation of a vertebrate cell by increase in cell vertebrate cell proliferation to create a medicament that inhibits ageing. A protein preparation of hTRT and the couple of polynucleotide encoding hTRT can be used in the manufacture of complex medicaments for inhibiting the effect of ageing or cancer. Inhibitors of the manufacture of the medicament complex and the medicaments for inhibiting the effect of ageing or cancer. Inhibitors of the with high telomerase activity. A protein preparation of hTRT can also be
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         RTSIRASLTFNRGFKAGRNWRRKLFGVLRLKCHSLFLDLQVNSLQTVCTNIYKILLLLQAY 1010
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              QWLCHQAFLLKLTRHRVTYVPLLGSLRTAQTQLSRKLPGTTLTALEAAANPALPSDFKTI 1130
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Human; telomerase reverse transcriptase; hTRT; TRT; diagnosis; prognosis;
                                                        Pure and recombinant human Telomerase Reverse Transcriptase and its variants - are useful in the diagnosis, prognosis and treatment of cell proliferation conditions especially cancer and ageing.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        831 IPQGSILSTLLCSLCYGDMENKLFAGIRRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                237 IPQGSILSTLLCSLCYGDMENKLFAGIRRDGLLLRLVDDFLLVTPHLTHAKTFLRTTVRG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               VPEYGCVVNLRKTVVNPPVEDBALGGTAFVQMPAHGLFPWCGLLLDTRTLEVQSDYSSYA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              297 VPEYGCVVNLRKTVVNFPVEDEALGGTAFVQMPARGLFPWCGLLLDTRTLEVQSDYSSYA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RFHACVLQLPFHQQVWKNPTFFLRVISDTASLCYSILKAKNAGMSLGAKGAAGPLPSEAV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       .
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Length 538;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   3; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           cell proliferation; cancer; ageing; ribonucleoprotein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Glutathione-S-transferase and hTRT fusion protein 4.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            25.8%; Score 1538; DB 2; 98.3%; Pred. No. 3.3e-120; iive 2; Mismatches 3;
                                                                                                                                    Example 6; Page 224; 387pp; English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Ź
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AAW47004 standard; protein; 514
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Matches 297; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    used in the new methods
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      LD 1132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence 538 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           LD 538
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1011
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AAW47004;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 891
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         951
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            357
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              101
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1131
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         537
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AAW47004
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    RESULT
   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       EXXEXEXEX
                                                                            120
                                                                                                                                                      180
                                                                                                                                                                                                                                240
                                                                                                                                                                                                                                                                  240
                                                                                                                                                                                                                                                                                                                          GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG 300
                                                                                                               120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Human; telomerase reverse transcriptase; hTRT; TRT; diagnosis; prognosis; cell proliferation; cancer; ageing; ribonucleoprotein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /note= "glutathione-S-transferase fragment"
221. .226
/note= "thrombin cleavage sequence"
227. .231
/note= "heart muscle protein kinase recognition sequence"
232. .236
   9
                   SYLPNTVTDALRGSGAWGLLLRRVGDDVLVHLLARCALFVLVAPSCAYQVCGPPLYQLGA
                                                                                                                                                                        ATQARPPPHASGPRRLGCERAWNHSVREAGVPLGLPAPGARRRGGSASRSLPLPKRPRR
                                                                                                                                                                                                                                                                                                       GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSLEGALSGTRHSHPSVG
                                                                          DARPPPAAPSFRQVSCLKELVARVLQRLCERGAKNVLAFGFALLDGARGGPPEAFTTSVR
                                                                                                                                                                                                                            ATQARPPPHASGPRRRLGCERAWNHSVREAGVPLGLPAPGARRRGGSASRSLPLPKRPRR
MPRAPRCRAVRSILRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Harley CB;
                                                                                                                                                                                                                                                                                                                                                                                                     RQHHAGPPSTSRPPRPWDTPCPPVYAETKHFLYSSGDKEQLRPSFLLS 348
                                                                                                                                                                                                                                                                                                                                                                               RQHHAGPPSTSRPPRPWDTPCPPVYAETKHFLYSSGDKEQLRPSFLLS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Morin GB,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /note= "residues introduced by cloning'
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Glutathione-S-transferase and hTRT fusion protein 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Chapman KB,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /note= "hTRT protein fragment"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Lingner J, Nakamura T,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AAW47001 standard, protein; 538
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       96US-00724643.
97US-00846119.
97US-00846117.
97US-00854050.
97US-00911312.
97US-00911312.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GERON CORP.
UNIV TECHNOLOGY CORP.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        97GB-00020890
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   237. .538
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Misc-difference
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Misc-difference
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Misc-difference
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Synthetic.
Homo sapiens.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    01-OCT-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          13-AUG-1998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        14-AUG-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GB2317891-A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  08-APR-1998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           01-OCT-1996
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          18-APR-1997
25-APR-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Cech TR, L
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    J6-MAY-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   09-MAY-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       14-AUG-1997
14-AUG-1997
                                                                                                             61
                                                                                                                                                                                       121
                                                                                                                                                                                                                            181
                                                                                                                                                                                                                                                                181
                                                                                                                                                  121
                                                                                                                                                                                                                                                                                                                                                                               301
                                                                                                                                                                                                                                                                                                                                                                                                                  301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (GERO-)
(UYTE-)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Region
```

ö

Gaps

356

416

476

```
(first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Zhaoyang Y,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  WPI; 2003-430511/40.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      N-PSDB; AAL60416.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            WO2003038047-A2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Crohn's dises
cell therapy.
                                                                                                                                                                                                                                                                                                                                                                     27-AUG-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 08-MAY-2003.
                                                                                                                                                                                                                                                                                                                                 AA029774;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (e.g. lung
sclerosis
                                                                                                                           416
                                                     356
                                                                                                                                                               521
                                                                                                                                                                                                    476
                    401
                                                                                           461
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Chen S,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Region
                                                                                                                                                                                                                                                                          AA02977
                                             셤
                                                                                           ઠે
                                                                                                                    g
                                                                                                                                                               8
                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             The present sequence represents a fusion protein from an example of the present invention which describes human telomerase reverse transcriptase (TMTRT). The present invention also describes the following methods: (A) determining whether a test compound is a modulator of hTRT, by detecting the change in hTRT recombinant protein or polynucleotide, on administration of the compound; (B) preparation of recombinant telomerase by contacting a protein preparation of hTRT with a telomerase RNA component; (C) detection of the hTRT RNA or protein in a sample by binding a relevant probe to the sample and detecting the complex formed or in the case of RNA detection, amplifying the product and correlating the presence of complex or amplification product with presence of hTRT in the sample; and (D) increasing the proliferation of a vertebrate cell by increase in cell vertebrate cell proliferation to create a medicament that inhibits ageing. A protein preparation of HTRT and the productual confide encoding HTRT can be used in the manufacture of medicament for inhibiting the effect of ageing or cancer. Inhibitors of the method of the production of the production of the production of the production of the medicament confidence and production of the production production of the production of the production of the producti
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            340
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               cell
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        EATSLEGALSGTRHSHPSVGRQHHAGPPSTSRPPRPWDTPCPPVYAETKHFLYSSGDKEQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Chapman KB, Morin GB, Harley CB;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            its
of c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Pure and recombinant human Telomerase Reverse Transcriptase and variants - are useful in the diagnosis, prognosis and treatment proliferation conditions especially cancer and ageing.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ..
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Length 514;
                                                                                                          /note= "glutathione-S-transferase fragment"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Score 1506; DB 2;
Pred. No. 1.5e-117;
L; Mismatches 0;
                                                                                                                                            /note= "hTRT protein fragment"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Example 6; Page 226-227; 387pp; English.
                                                                      location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Lingner J, Nakamura T,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1;
                                                                                                                                                                                                                                                                                         96US-00724643.
97US-0084419.
97US-00851843.
97US-00854050.
97US-0091312.
97US-0091251.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 25.3%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        UNIV TECHNOLOGY CORP.
                                                                                                                                                                                                                                                         97GB-00020890
                                                                                                                           .514
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
Best Local Similarity 99.6'
Matches 278; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           in the new methods
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        WPI; 1998-171633/16.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CORP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sequence 514 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                               GERON
                                    Homo sapiens
                                                                                                                                                                                                                                                         01-OCT-1997;
                                                                                                                                                                                    3B2317891-A
                                                                                                                                                                                                                   08-APR-1998
                                                                                                                                                                                                                                                                                             01-OCT-1996
                                                                                                                                                                                                                                                                                                                             25-APR-1997
06-MAY-1997
                                                                                                                                                                                                                                                                                                                                                                                      14-AUG-1997
                                                                                                                                                                                                                                                                                                                                                                                                        14-AUG-1997
14-AUG-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Andrews WH;
                                                                                                                                                                                                                                                                                                              18-APR-1997
                                                                                                                                                                                                                                                                                                                                                                   09-MAY-1997
                   Synthetic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            281
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Cech TR,
                                                                                                                                                                                                                                                                                                                                                                                                                                                               (GERO-)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (UXTE-)
                                                                          Key
Region
                                                                                                                             Region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ased
윤
```

296 LRPSFLLSSLRPSLTGARRLVETIFLGSRPWMPGTPRRLPRLPQRYWQWRPLFLELLGNH 355

LRPSFLLSSLRPSLTGARRLVETIFLGSRPWMPGTPRRLPRLPQRYWQMRPLFLELLGNH

341

8

ઠ

a

```
The invention relates to human telomerase reverse transcriptase (hTRT) major histocompatibility complex (MHC)-I or MHC-II restricted tumour-sesociated antigens (TAA) and polynucleotides encoding such proteins. The invention is useful for treating hyperproliferative diseases such as cancer, head and neck cancer, panoreatic cancer, breast cancer, prostate cancer, renal cancer, bone cancer, testicular cancer, cervical cancer, gastrointestinal cancer, lymphomas, colon cancer, preneoplastic lesions in the lung, melanoma or bladder cancer) or immunemediated diseases which include arthritis, Crohn's disease, vasculitis, Grave's disease, multiple sclerosis, atherosclerosis, diabetes, systemic
460
                     AQCPYGVILKTHCPILRAAVTPAAGVCAREKPQGSVAAPEEEDTDPRRLVQILRQHSSPWQ 415
                                                                                          VYGFVRACLRRLVPPGLWGSRHNERRFLRNTKKFISLGKHAKLSLQELTWKMSVRDCAWL 475
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               New human telomerase reverse transcriptase tumor-associated MHC-I or MHC-II restricted polynucleotides and antigens, useful for treating cancers (e.g. lung or bone cancer or lymphomas), Crohn's disease or multiple
                                                                                                                                                                                                                                                                                                                                                                                                                                                 hyperproliferative disease; major histocompatibility complex; hTRT; TAA; immune-mediated disease; systemic lupus errythematosus; protein therapy; Grave's disease; multiple scherosis; atherosclerosis; cancer; diabetes; Crohn's disease; gene therapy; arthritis; epitope; vaccine; vasculitis;
                                                                                                                                                                                                                                                                                                                                                                                                                             Human; telomerase reverse transcriptase; MHC; tumour-associated antigen
                                                                       VYGFVRACLRRLVPPGLWGSRHNERRPLRNTKKFISLGKHAKLSLQELTWKMSVRDCANL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     34. .48
/note= "MHC-II restricted epitope fragment"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /note= "MHC-II restricted epitope fragment"
                                                                                                                                                                                   514
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /note= "MHC-II restricted epitope
                                                                                                                                                                  RRSPGVGCVPAAEHRLREEILAKFLHWLMSVYVVELLRS
                                                                                                                                                                                                                                                                                                                                                                                          hTRT MHC restricted epitope from clone 8.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Location/Qualifiers
                                                                                                                                                                                                                                                                              ġ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ĸ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Claim 3; Fig 2C; 143pp; English.
                                                                                                                                                                                                                                                                            AAO29774 standard; protein; 291
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (BAYU ) BAYLOR COLLEGE MEDICINE.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Schroers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          29-OCT-2002; 2002WO-US034588.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               29-OCT-2001; 2001US-0345012P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      .147
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          .241
```

```
ö
                                                                                                                          599
                                                                                                                                                                       629
                                                                                                                                                                                 719
                                                                                                                                                                                                                             779
                                                                                                                                                                                                                                                                          9
lupus erythematosus etc. The invention is used in gene therapy, protein therapy, cell therapy and also in the preparation of vaccines. The present sequence is hTRT MHC class I and II restricted epitope
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                the
                                                                                                                    540 ILAKFLHWLMSVYVVELLRSFFYVTETTFOKNRLFFYRKSVWSKLOSIGIROHLKRVQLR
                                                                                                                                ELSEAEVROHREARPALLTSRLRFIPKPDGLRPIVNMDYVVGARTFRREKRAERLTSRVK
                                                                                                                                                                                                                ALFSVLNYERARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDPPPELYFVKVDVTGAYDT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            This sequence represents the human telomerase reverse transcriptase (hTBRT). The invention relates to a monoclonal antibody recognising the hTBRT. The antibody can be used for the investigation, diagnosis and treatment of talomerase-ralated diseases, especially diseases in which telomerase expression is up-regulated e.g. cancers
                                                                                                                                                                                                                                                               IPQDRLTEVIASIIKPQNTYCVRRYAVVQKAAHGHVRKAFKSHVSTLTDLQPYMRQFVAH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          catalytic subunit
                                                                                                  Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Human telomerase reverse transcriptase; hTERT; antibody; diagnosis;
telomerase-related disease; cancer.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ħ,
                                                                                                                                                                                                                                                                                                             LOETSPLRDAVVIEQSSSLNEASSGLFDVFLRFMCHHAVRIRGKSYVQCQG 830
                                                                                                                                                                                                                                                                                                                           Anazawa
                                                                                                  ;
                                                                           Length 291;
                                                                      25.0%; Score 1490; DB 6; Length 2
100.0%; Pred. No. 1.5e-116;
ive 0; Mismatches 0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Mikuni O,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    New monoclonal antibody recognizing human telomerase (hTERT) useful for treating and diagnosing cancer.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Furuya A,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Human telomerase reverse transcriptase.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Claim 2; Page 72-73; 78pp; Japanese.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ×
                                                                                                                                                                                                                                                                                                                                                                                             AAY43128 standard; protein; 283
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Shibata
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    99WO-JP001557
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         98JP-00098486
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (KYOW ) KYOWA HAKKO KOGYO KK
                                                                                 Best Local Similarity Acc.
Matches 291; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                            (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Yamasaki M,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              WPI; 1999-591316/50.
                                              Sequence 291 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         telomerase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sequence 283 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                           20-DEC-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  WO9950407-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 26-MAR-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         26-MAR-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         07-OCT-1999
                                                                                                                                                                  900
                                                                                                                                                                                         61
                                                                                                                                                                                                                099
                                                                                                                                                                                                                                                               720
                                                                                                                                                                                                                                                                                                                                   241
                                                                      Query Match
                                                                                                                                                                                                                                                                                                             780
                                                                                                                                                                                                                                                                                                                                                                                                                     AAY43128;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Hanai N,
                                                                                                                                                                                                                                                                                                                                                                      RESULT 7
883333
                                                                                                                     ð
                                                                                                                                        셤
                                                                                                                                                                 ò
                                                                                                                                                                                       ద
                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                   요
                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                    유
                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                 8
```

```
ö
                                                                                                       609
                                                                                                                                                                                            668
                                                                                                                                                                                                              9
                                                                                                                                                                                                                                                                                728
                                                                                                                                                                                                                                                                                                                                                                     788
                                                                                                                                                                                                                                                                                                                                                                                                            240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Human; telomerase reverse transcriptase; hTRT; TRT; diagnosis; prognosis;
cell proliferation; cancer; ageing; ribonucleoprotein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Pure and recombinant human Telomerase Reverse Transcriptase and its variants - are useful in the diagnosis, prognosis and treatment of cell proliferation conditions especially cancer and ageing.
                                                                                                                                                                                  HREARPALLTSRLRF! PKPDGLRP!VNMDYVVGARTFRREKRAERLTSRVKALFSVLNYE
                                                                                         549 MSVYVVELLRSFFYVTETTFQKNRLFFYRKSVWSKLQSIGIRQHLKRVQLRELSEAEVRQ
                                                                                                                       RARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDPPPELYFVKVDVTGAYDTIPQDRLTEV
                                                                                                                                                                                                                                                                                                                                                            IASIIKPQNTYCVRRYAVVQKAAHGHVRKAFKSHVSTLTDLQPYMRQFVAHLQETSPLRD
                                                                                                                                                                                                                                                                                                                                                                                        Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Harley CB;
                                                           ö
                  Length 283;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1. .221
/note= "glutathione-S-transferase fragment"
249. .531
/note= "hTRT protein fragment"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Morin GB,
                                                         Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                               AVVIEQSSSLNEASSGLFDVFLRFMCHHAVRIRGKSYVQCQGI 831
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Glutathione-S-transferase and hTRT fusion protein 2.
             Score 1444; DB 2; I
Pred. No. 1.1e-112;
                                                           ;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Chapman KB,
24.2%; Sco...
100.0%; Pred. No. 1....
0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Ź
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Nakamura T,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AAW47002 standard; protein; 531
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        96US-00724643.
97US-00844119.
97US-00846017.
97US-00854050.
97US-00911312.
97US-00912351.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 97GB-00020890
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              UNIV TECHNOLOGY CORP.
    Query Match
Best Local Similarity 100.
Matches 283; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Lingner J,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         WPI; 1998-171633/16.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GERON
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Synthetic.
Homo sapiens.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               01-OCT-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         13-AUG-1998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             09-MAY-1997;
14-AUG-1997;
14-AUG-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GB2317891-A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      01-OCT-1996,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      06-MAY-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      08-APR-1998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               18-APR-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      25-APR-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  14-AUG-1997
                                                                                                                                                                                  609
                                                                                                                                                                                                                            61
                                                                                                                                                                                                                                                                                                                                                          729
                                                                                                                                                                                                                                                                                                                                                                                                                                                 789
                                                                                                                                                                                                                                                                       699
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AAW47002;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Key
Region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Andrews
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (UXTE-)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (GERO-)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Cech
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RESULT 77
                                                                                                                                  음
                                                                                                                                                                                  ઠ
                                                                                                                                                                                                                В
                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TID XX BX X B X X B X X B X X B X X B X X B X X B X X B X X B X X B X X B X X B X X B X X B X X B X X B X X B X X B X X B X X B X X B X X B X X B X X B X X B X X B X X B X X B X X B X X B X X B X X B X X B X X B X X B X X B X X B X X B X X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B X B 
                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                       유
                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
```

```
The present sequence represents a fusion protein from an example of the present invention which describes human telomerase reverse transcriptase (HTRT). The present invention also describes the following methods: (A) determining whether a test compound is a medulator of hTRT, by detecting the change in hTRT recombinant protein or polynucleotide, on administration of the compound; (B) preparation of recombinant telomerase component; (C) detection of the hTRT RNA or protein in a sample by binding a relevant probe to the sample and detecting the complex formed or in the case of RNA detection, amplifying the product and correlating the presence of complex or amplification product with presence of hTRT in the reason of NTRT expression; and (E) the use of an agent that causes an increase in cell vertebrate cell proliferation of hTRT and the causes an increase in cell vertebrate cell proliferation to create a medicament that inhibits ageing. A protein preparation of hTRT and the proliferation of the madicament for inhibiting the effect of ageing or cancer. Inhibitors of telomerase activity can be used in the manufacture of medicaments for inhibiting the effect of ageing or cancer. Inhibitors of the hard and activity are associated and and activity of the presence of medicaments for inhibiting the effect of ageing or cancer. Inhibitors of the presence of the p
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              296 DAR-PPAAPSFRQVSCLKELVARVLQRLCERGARNVLAFGFALLDGARGGPPEA-TTSVR 353
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         354 SYLPNTVTDALRGSGAWGLLLRRVGDDVLVHLLARCALFVLVAP-CAYQVCGPPLYQLGA 412
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             181 ATQARPPPHASGPRRRLGCERAWNHSVREAGVPLGLPAPGARRRGGSASRSLPLPKRPRR 240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DARPPPAAPSFROVSCLKELVARVLORLCERGAKNVLAFGFALLDGARGGPPEAFTTSVR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SYLPNIVIDALRGSGAWGLILRRVGDDVLVHLLARCALFVLVAPSCAYQVCGPPLYQLGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1 MPRAPRCRAVRSLLRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCLVCVPW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Pure and recombinant human Telomerase Reverse Transcriptase and its variants - are useful in the diagnosis, prognosis and treatment of oppoliferation conditions especially cancer and ageing.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Length 516;
/note= "glutathione-S-transferase fragment"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Morin GB,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Score 1417.5; DB 2;
Pred. No. 4.3e-110;
2; Mismatches 2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Chapman KB,
                     237. .516
/note= "hTRT protein fragment"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Example 6; Page 227; 387pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Lingner J, Nakamura T,
                                                                                                                                                                                                                                                                                                                                                            97US-00854050.
97US-00911312.
97US-00912951.
97US-00915503.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             UNIV TECHNOLOGY CORP.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    23.8%;
96.8%;
                                                                                                                                                                                                         97GB-00020890
                                                                                                                                                                                                                                                          96US-00724643
97US-00844419
                                                                                                                                                                                                                                                                                                           97US-00846017
97US-00851843
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match 23.8°
Best Local Similarity 96.8°
Matches 276, Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               used in the new methods
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           WPI; 1998-171633/16.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CORP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Sequence 516 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GERON
                                                                                                                                                                                                      01-OCT-1997;
                                                                                                    GB2317891-A
                                                                                                                                                                                                                                                                                                                                                                                        14-AUG-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Andrews WH;
                                                                                                                                                     08-APR-1998
                                                                                                                                                                                                                                                          01-OCT-1996
                                                                                                                                                                                                                                                                                        18-APR-1997
                                                                                                                                                                                                                                                                                                           25-APR-1997
06-MAY-1997
                                                                                                                                                                                                                                                                                                                                                                  09-MAY-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                              14-AUG-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Cech TR,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (GERO-)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (UYTE-)
                           Region
유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          à
                                                           The present sequence represents a fusion protein from an example of the present invention which describes human telomerase reverse transcriptase (hTRT). The present invention also describes the following methods: (h) determining whether a test compound is a modulator of hTRT, by detecting the change in hTRT recombinant protein or polynucleotide, on administration of the compound; (B) preparation of recombinant telomerase by contacting a protein preparation of hTRT with a telomerase RNA component; (C) detection of the hTRT RNA or protein in a sample by binding a relevant probe to the sample and detecting the complex formed or in the case of RNA detection, amplifying the product and correlating the presence of complex or amplification product with presence of hTRT in the presence of complex or amplification product with presence of hTRT in increasing hTRT expression; and (B) the use of an agent that causes and increase in cell vertebrate cell proliferation to create a medicament that inhibits ageing. A protein preparation of hTRT and the manufacture of medicaments for inhibiting the effect of ageing or cancer. Inhibitors of telomerase activity can be used to treat conditions that are associated with high telomerase activity. A protein preparation of hTRT can also be apply moderant as activity.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         281
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                641
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           282 SKLQSIGIRQHLKRVQLRELSEAEVRQHREARPALLTSRLRFIPKPDGLRPIVNMDYVVG 341
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    701
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        401
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            761
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             461
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 821
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     521
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Human; telomerase reverse transcriptase; hTRT; TRT; diagnosis; prognosis; cell proliferation; cancer; ageing; ribonucleoprotein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   228 RRASVGSVHHHHHHHGSVTK-----MSVYVVELLRSFFYVTETTFQKNRLFFYRPSVW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        522 RSPGVGCVPAAEHRLREEILAKFLHWLMSVYVVELLRSFFYVTETTFOKNRLFFYRKSVW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SKLOSIGIROHLKRVOLRELSEARVROHREARPALLTSRLRFIPKPDGLRPIVNMDYVVG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       702 PPPELYFVKVDVTGAYDTIPQDRLTEVIASIIKPQNTYCVRRYAVVQKAAHGHVRKAFKS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       762 HVSTLIDLQPYMRQFVAHLQETSPLRDAVVIEQSSSLNEASSGLFDVFLRFMCHHAVRIR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               462 HVSTLTDLQPYMRQFVAHLQETSPLRDAVVIEQSSSLNEASSGLFDVFLRFMCHHAVRIR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ARTFRREKRAERLTSRVKALFSVLNYERARRPGLLGASVLGLDDIHRAWRTFVLRVRAQD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       6; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Length 531;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    16; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Glutathione-S-transferase and hTRT fusion protein 5.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Score 1439; DB 2;
Pred. No. 6.9e-112;
1; Mismatches 16;
                     Page 225; 387pp; English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AAW47005 standard; protein; 516 AA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                24.1%;
92.6%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              13-AUG-1998 (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
Best Local Similarity 92.67
Matches 287; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         in the new methods
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      831
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GKSYVQCQGI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GKSYVQCQGI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sequence 531 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Homo sapiens
                     .
9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Synthetic.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  642
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          582
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          402
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   822
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AAW47005;
```

Harley CB;

nsed

셤

ઠે

셤

Š 셤 셤

ઠે

셤 ઠે

ઠે

ò

5

Gaps

5;

120

Key Region

14x88x4x6x1x4x1

RESULT 78 AAW47005

셤

Ξ, 540

Gape

23;

Indels

Length 514;

629

719 405

> 831 514

413 241 473

셤 ò 용 Synthetic

Key Region Region

AAW47003;

RESULT 75

```
334 VIK-----MSVYVVELLKSFFYVTETTFQKNRLFFYRPSVWSKLQSIGIRQHLKRVQLRE 288
                                                                                                                                                                                                                                                                                                                                                                                                                              IPQDRLTEVIASIIKPONTYCVRRYAVVQKAAHGHVRKAFKGHVSTLTDLQPYMRQFVAH 779
             that inhibits againg. A protein preparation of hTRT and the polynucleotide encoding hTRT can be used in the manufacture of medicaments for inhibiting the effect of againg or cancer. Inhibitors of telomerase activity can be used to treat conditions that are associated with high telomerase activity. A protein preparation of hTRT can also be used in the new methods
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   487 FLRNTKKFISLGKHAKLSLQELTWKMSVRDCAWLR-----RSPGVGCVPAAEHRLREEI
                                                                                                                                                                                                                                                                                                                               541 LAKFLHWLMSVYVVELLRSFFYVTETTFOKNRLFFYRKSVWSKLOSIGIROHLKRVOLRE
                                                                                                                                                                                                                                                                                          179 FKKRIEAIPQIDKYLK-SSKYIAWPLQ----GWQATFGGGDHPPKSDLVPPGSRRASVGS
                                                                                                                                                                                                                                                                                                                                                                                                           LSEAEVROH-REARPALLTSRLRFIPKPDGLRPIVNMDYVVGARTFRREKRAERLTSRVK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 660 ALFSVLNYERARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDPPPELYFVKVDVTGAYDT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          telomerase catalytic activity;
hydrogen peroxide-induced cellular senescence; proliferative disease;
cancer; human; telomerase reverse transcriptase; enzyme.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             New human telomerase reverse transcriptase polypeptide, useful in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 LOETSPLRDAVVIEOSSSLNEASSGLFDVFLRFMCHHAVRIRGKSYVQCQGI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DB 2;
                                                                                                                                                                               Query Match 22.3%; Score 1330.5; DB 2; Best Local Similarity 81.2%; Pred. No. 9e-103; Matches 286; Conservative 8; Mismatches 35;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             telomerase reverse transcriptase.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Ή,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Kung
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    $
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ADG85224 standard; protein; 250
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Lin MCM,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        31-MAY-2002; 2002US-0384806P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   30-MAY-2003; 2003US-00449565.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      11-MAR-2004 (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Huang JJ, Huang C,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        WPI; 2004-089418/09
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         HUANG J.
HUANG C.
LIN M C M.
KUNG H.
                                                                                                                                                Sequence 514 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            N-PSDB; ADG85223
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           US2003225027-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Homo sapiens,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                04-DEC-2003
                                                                                                                                                                                                                                                                                                                                                                                                           601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ADG85224;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           720
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      464
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 780
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (HUAN/) I
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (LINM/)
(KUNG/)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Human
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RESULT 8
ADG85224
               8888888888
                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                           à
                                                                                                                                                                                                                                                                                                                                 à
                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                The present sequence represents a fusion protein from an example of the present invention which describes human telomerase reverse transcriptase (HTRT). The present invention also describes the following methods: (A) determining whether a test compound is a modulator of hTRT, by detecting the change in hTRT recombinant protein or polynucleotide, on administration of the compound, (B) preparation of recombinant telomerase (C) by contacting a protein preparation of hTRT with a telomerase RNA component, (C) detection of the hTRT RNA or protein in a sample by by binding a relevant probe to the sample and detecting the complex formed the presence of Camponent, amplifying the product and correlating the presence of complex or amplification product with presence of hTRT in the case of RNA detection, amplifying the product and correlating the sample, and (D) increasing the proliferation of a vertebrate cell by increasing hTRT expression; and (E) the use of an agent that causes an increase in cell vertebrate cell proliferation to create a medicament
Human; telomerase reverse transcriptase; hTRT; TRT; diagnosis; prognosis;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Pure and recombinant human Telomerase Reverse Transcriptase and its variants - are useful in the diagnosis, prognosis and treatment of cell proliferation conditions especially cancer and ageing.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Harley

    .220
    /note= "glutathione-S-transferase fragment"
    .514

                                                                285
                                                                                                     516
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Morin GB,
                                                        GAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSL
                                                                           cell proliferation; cancer; ageing; ribonucleoprotein.
                                                                                                                                                                                                                                                                                                  Glutathione-S-transferase and hTRT fusion protein 3.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Chapman KB,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /note= "hTRT protein fragment
                                                                                                                                                                                                                                                                                                                                                                                                                                                        Location/Qualifiers
                                                                                                                                                                                              Ź
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Example 6; Page 226; 387pp; English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Lingner J, Nakamura T,
                                                                                                                                                                                     AAW47003 standard; protein; 514
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              97US-00844419.
97US-00846017.
97US-00851843.
97US-00854050.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      97US-00911312.
97US-00912951.
97US-00915503.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            UNIV TECHNOLOGY CORP.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           97GB-00020890
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              96US-00724643
                                                                                                                                                                                                                                                                   (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           WPI; 1998-171633/16.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CORP.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GERON
                                                                                                                                                                                                                                                                                                                                                                                                                   Homo sapiens.
                                                                                                                                                                                                                                                                   13-AUG-1998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       01-OCT-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              18-APR-1997;
25-APR-1997;
06-MAY-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GB2317891-A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    08-APR-1998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            01-OCT-1996
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        14-AUG-1997
14-AUG-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           14-AUG-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ¥.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      09-MAY-1997
```

TR,

Cech

Andrews

(GERO-) (UYTE-)

```
Cech TR, Li
셤
                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                     ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                               à
                                                                                                                                                                                                                     1002
                                                                                                                                                                                                                                                                                               1122
                                                                                                                                                                                                                                                          1062
                                                                                                                                                              ö
                                                                                                                                                                                                                                                                    GPLPSEAVQWLCHQAFLLKLTRHRVTYVPLLGSLRTAQTQLSRKLPGTTLTALEAAANPA 240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Human; telomerase reverse transcriptase; hTRT; TRT; diagnosis; prognosis; cell proliferation; cancer; ageing; ribonucleoprotein.
                                                      catalytic activity or inhibitory effect on telomerase catalytic activity in a cell and has the ability to sensitize HeLa cells to hydrogen peroxide-induced cellular senescence. The polypeptide is useful in preparing a composition for treating or preventing proliferative disease e.g. cancer. The present sequence represents the amino acid sequence of human telomerase reverse transcriptase.
                                                                                                                                                                                                  9
composition for treating or preventing proliferative disease,
                                                                                                                                                                                                                                QSDYSSYARTSIRASLTFNRGFKAGRNMRRKLFGVIRLKCHSLFLDLQVNSLQTVCTNIY
                                                                                                                                                                               FLRTLVRGVPEYGCVVNLRKTVVNFPVEDEALGGTAFVQMPAHGLFPWCGLLLDTRTLEV
                                                                                                                                                                                          QSDYSSYARTSIRASLTFNRGFKAGRNMRRKLFGVLRLKCHSLFLDLQVNSLQTVCTNIY
                                                                                                                                                                                                                                                         KILLLQAYRFHACVLQLPFHQQVWKNPTFFLRVISDTASLCYSILKAKNAGMSLGAKGAA
                                                                                                                                                                                                                                                                                              GPLPSEAVQWLCHQAFLLKLTRHRVTYVPLLGSLRTAQTQLSRKLPGTTLTALEAAANPA
                                                                                                                                                                                                                                                                                                                                                                                                                                                            Human telomerase reverse transcriptase protein from cDNA clone 712562.
                                                                                                                                                               Gaps
                                             new polypeptide which lacks telomerase
                                                                                                                                                              .
                                                                                                                                           Length 250;
                                                                                                                                                              Indele
                                                                                                                                          Score 1296; DB 8; I
Pred. No. 2.6e-100;
                                                                                                                                                             ;
0
                                                                                                                                  21.7%; Scor.
100.0%; Pred. No. 2...
0; Mismatches
                           Claim 3; SEQ ID NO 2; 38pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                    AAW46998 standard; protein; 259 AA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   96US-00744419.
97US-00844119.
97US-00846017.
97US-00854050.
97US-00911312.
97US-00912511.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   97GB-00020890
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 UNIV TECHNOLOGY CORP.
                                                                                                                                                             Matches 250; Conservative
                                                                                                                                                                                                                                                                                                                                  LPSDFKTILD 1132
                                                                                                                                                                                                                                                                                                                                                      250
                                                                                                                                                                                                                                                                                                                                               LPSDFKTILD
                                                                                                                                                   Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CORP
                                                                                                                         Sequence 250 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GERON
          .g., cancer.
                                                                                                                                                                                                                                                                                                                                                                                                                                          13-AUG-1998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  01-OCT-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               06-MAY-1997;
09-MAY-1997;
14-AUG-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GB2317891-A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               08-APR-1998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     01-OCT-1996
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        25-APR-1997
preparing
                                                                                                                                                                                                                     943
                                                                                                                                                                                                                                        61
                                                                                                                                                                                                                                                         1003
                                                                                                                                                                                                                                                                                               1063
                                                                                                                                                                                                                                                                                                                                   1123
                                                                                                                                          Query Match
Best Local 3
                                                                                                                                                                                                                                                                                                                 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (GERO-)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (UYTE-)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Ношо
                                                                                                                                                                                                                                                                                                                                                                                           AAW46998
g
                                                                                                                                                                                                                                      d
                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                      ð
                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                        ð
                                                                                                                                                                                                                                                                                               ઠ
                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                  8
                                                                                                                                                                                                                                                                                                                                                   셤
```

```
inte present equence teptresents a nument terromant transfer to the present invention also describes the following methods: (A) determining whether a invention also describes the following methods: (A) determining whether a cree compound is a modulator of hTRT, by detecting the change in hTRT recombinant protein or polynucleotide, on administration of the compound; (B) preparation of recombinant telomerase by contacting a protein or protein or polynucleotide, on administration of the compound; (C) detection of the preparation of hTRT with a telomerase RNA component; (C) detection of the hTRT RNA or protein in a sample by binding a relevant probe to the sample of hTRT RNA or protein in a sample by binding a relevant probe to the sample or amplification product with presence of HTRT in the sample; and (D) increasing the product with presence of HTRT in the sample; and (D) increasing the proliferation of a vertebrate cell by increasing hTRT vertebrate cell proliferation of the proposed an increase in cell contraction of a vertebrate a medicament that inhibits againg. A protein preparation of hTRT and the polynucleotide encoding hTRT can be used in the manufacture of medicaments for inhibiting the effect of ageing or cancer. Inhibitors of telomerase activity, A protein preparation of hTRT can also be used in the new methods activity. A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      609 HREARPALLTSRLRFIPKPDGLRPIVNMDYVVGARTFRREKRAERLTSRVKALFSVLNYB 668
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               HREARPALLISKLRFIPKPDGLRPIVNMDYVVGARTFRREKRAERLTSRVKALFSVLNYE 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         RARRPGLLGASVLGLDDIHRAWRTFVLRVRAQDPPPELYFVKVDVTGAYDTIPQDRLTEV 728
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              present sequence represents a human telomerase reverse transcriptase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Human; telomerase reverse transcriptase; MHC; tumour-associated antigen; hyperproliferative disease; major histocompatibility complex; hTRT; TAA; immune-mediated disease; systemic lupus erythematosus; protein therapy; Grave's disease; multiple sclerosis; atherosclerosis; cancer; diabetes; Crohn's disease; gene therapy; arthritis; epitope; vaccine; vasculitis;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1 MSVYVVELLRSFFYVTETTFQKNRLFFYRKSVWSKLQSIGIRQHLKRVQLRELSEAEVRQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          549 MSVYVVELLRSFFYVTETTFQKNRLFFYRKSVWSKLQSIGIRQHLKRVQLRELSEAEVRQ
   œ;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gaps
                                                                                                                                                                                                                          variants - are useful in the diagnosis, prognosis and treatment of proliferation conditions especially cancer and ageing.
Harley
                                                                                                                                                                                            Pure and recombinant human Telomerase Reverse Transcriptase and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Length 259;
   Morin GB,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          18.4%; Score 1096; DB 2; 100.0%; Pred. No. 1.9e-83;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              IASIIKPONTYCVRRYAVVQKAAHGHVRKAFKSHV 215
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      IASIIKPONTYCVRRYAVVOKAAHGHVRKAFKSHV 763
   Chapman KB,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     100.0%; Pred. No. 1.>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                hTRT MHC restricted epitope from clone 35
Nakamura T,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AAO29775 standard; protein; 174 AA
                                                                                                                                                                                                                                                                                                                        Example 1; Fig 19; 387pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Best Local Similarity 100.
Matches 215; Conservative
   Lingner J,
                                                                                                                            N-PSDB; AAV22379
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence 259 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              cell therapy.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    27-AUG-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         699
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      729
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
```

```
Telomerase reverse transcriptase; TERT; ever shorter telomere; EST; therapy; stomach cancer; malaria; vaginal candidiasis.
                                                                     Location/Qualifiers
                                                                                                                                                            label= Unknown
                                                                                                                                                                                 label= Unknown
                                                                                                                                                                                                                              label= Unknown
                                                                                           label= Unknown
                                                                                                                                                                                                                                                    abel= Unknown
                                                                                                                                                                                                                                                                                                                       label= Unknown
                                                                                                                                                                                                                                                                                                                                            Unknown
                                                                                                                                                                                                                                                                                                                                                                                       label= Unknown
                                                                                                                                                                                                                                                                                                                                                                                                             abel= Unknown
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               label= Unknown
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Unknown
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               abel= Unknown
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    label= Unknown
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                label= Unknown
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     label= Unknown
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Unknown
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        label= Unknown
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              label= Unknown
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    label= Unknown
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          label= Unknown
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               label= Unknown
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /label= Unknown
                                                                                                                                                                                                                                                                                                                                            label=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            label=
                                                                                                                 label=
                                                                                                                                      label=
                                                                                                                                                                                                        label=
                                                                                                                                                                                                                                                                         label=
                                                                                                                                                                                                                                                                                                 label=
                                                                                                                                                                                                                                                                                                                                                                 label=
                                                                                                                                                                                                                                                                                                                                                                                                                                  label=
                                                                                                                                                                                                                                                                                                                                                                                                                                                         label=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   label=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         label=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   label=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         label=
                                                                                                                                                                                             Misc-difference
                                                                                                                                                                                                                                                            Misc-difference
                                                                               Misc-difference
                                                                                                    Misc-difference
                                                                                                                                                 Misc-difference
                                                                                                                                                                       Misc-difference
                                                                                                                                                                                                                                        Misc-difference
                                                                                                                                                                                                                                                                                                          Misc-difference
                                                                                                                          Misc-difference
                                                                                                                                                                                                                  Misc-difference
                                                                                                                                                                                                                                                                                    Misc-difference
                                                                                                                                                                                                                                                                                                                                                     Misc-difference
                                                                                                                                                                                                                                                                                                                                                                                                                       Misc-difference
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Misc-difference
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Misc-difference
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Misc-difference
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Misc-difference
                                                                                                                                                                                                                                                                                                                                Misc-difference
                                                                                                                                                                                                                                                                                                                                                                           Misc-difference
                                                                                                                                                                                                                                                                                                                                                                                                  Misc-difference
                                                                                                                                                                                                                                                                                                                                                                                                                                             Misc-difference
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Misc-difference
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Misc-difference
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Misc-difference
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Misc-difference
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Misc-difference
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Misc-difference
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Misc-difference
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Misc-difference
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Misc-difference
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Misc-difference
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Misc-difference
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Misc-difference
                                              Unidentified.
    The invention relates to human telomerase reverse transcriptase (hTRI) major histocompatibility complex (MHC)-I and MHC-II restricted tumourassociated antigens (TRA) and polynucleotides encoding such proteins. The invention is useful for treating hyperproliferative disease such as cancer (e.g. lung cancer, heating hyperproliferative diseases such as cancer, prostate cancer, renal cancer, pone cancer, patrones, concer, cervical cancer, gastrointestinal cancer, lymphomas, colon cancer, prencoplastic lesions in the lung, melanoma or bladder cancer) or immunemediated diseases which include arthritis, Crohn's disease, vasculitis, mediated disease which include arthritis, crohn's disease, systemic lupus erythematosus etc. The invention is used in gene therapy, protein therapy, cell therapy and also in the preparation of vaccines The present sequence is hTRI MHC class I and II restricted epitope
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          831 IPQGSILSTLLCSLCYGDMENKLFAGIRRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRG 890
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   or MHC-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       891 VPEYGCVVNLRKTVVNFPVEDEALGGTAFVQMPAHGLFPWCGLLLDTRTLEVQSDYSSYA 950
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    9
                                                                                                                                                                                                                                                                    New human telomerase reverse transcriptase tumor-associated MHC-I or MHC II restricted polynucleotides and antigens, useful for treating cancers (e.g. lung or bone cancer or lymphomas), Crohn's disease or multiple solerosis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Consensus sequence of telomerase reverse transcriptase (TERT) protein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RTSIRASLIFNRGFKAGRNMRRKLFGVLRLKCHSLFLDLQVNSLQTVCTNIYKI 1004
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ;
                                                    /note= "MHC-II restricted epitope fragment" 174 /note= "Encoded by AAG"
                       io . 64
inote= "MHC-II restricted epitope fragment"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length 174;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Indela
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                15.2%; Score 905; DB 6; 100.0%; Pred. No. 1.3e-67; tive 0; Mismatches 0;
            location/Qualifiers
                                                                                                                                                                                                                 Schroers R;
                                                                                                                                                                                                                                                                                                                          Claim 5; Fig 2C; 143pp; English.
                                                                                                                                                                                          (BAYU ) BAYLOR COLLEGE MEDICINE.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AAE00431 standard; protein; 379
                                                                                                                                                                    29-OCT-2001; 2001US-0345012P.
                                                                                                                                              29-OCT-2002; 2002WO-US034588
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
Best Local Similarity 100.8
Matches 174; Conservative
                                             36. .100
                                                                                                                                                                                                                 Zhaoyang Y,
                                                                                                                                                                                                                                      2003-430511/40.
                                                                                                                                                                                                                                               N-PSDB; AAL60417
                                                                 Misc-difference
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence 174 AA;
                                                                                                 WO2003038047-A2
                                                                                                                        08-MAY-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          19-JUN-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   951
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AAE00431
                                                                                                                                                                                                                Chen S,
            Key
Region
                                            Region
ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          EXEXEXE
EXEXEX
```

Unknown Unknown Unknown Unknown Unknown	Unknown	Unknown
131 /label= 133 /label= 146 /label= 156 /label= 158		/ Jabel = 1
Misc-difference Misc-difference Misc-difference Misc-difference Misc-difference Misc-difference	Misc-difference	Misc-difference

Unknown	Query Match 12.0%; Score 713; DB 4; Length 379; Best Local Similarity 39.3%; Pred. No. 5.8e-51; Matches 194; Conservative 31; Mismatches 137; Indels 132; Gaps 13; 451 LLRQHSSPWQVYGFVRACLRRLVPPGLWGSRHNERRFLRNTKKFISLGKHAKLSLQELTW 510
PX X X X Y X Y X Y X Y X X X X X X X X X	Query Beet 1 Beet 1 Oy Oy Oy Oy Oy Oy

```
61 VLRVRAQDPPPELYFVKVDVTGAYDTIPQDRLTEVIASIIKPQNTYCVRRYAVVQKAAHG 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 New catalytic protein of telomerase of a higher animal and a gene coding it - useful for diagnosis of diseases caused by the change in activity of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  The specification describes a human catalytic telomerase protein. The products are useful in drug compositions for the diagnosis of diseases caused by the change in activity of telomerase. The present sequence appears in the specification
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          542 AKFLHWLMSVYVVELLRSFFYVTETTFQKNRLFFYRKSVWSKLQSIGIRQHLKRVQLREL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1 AKFLHWLMSVYVVELLRSFFYVTETTFÇKNRLFFYRKSVWSKLQSIGIRQHLKRVQLRDV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SEAEVROHREARPALLTSRLRFIPKPDGLRPIVNMDYVVGARTFRREKRAERLTSRVKAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ;
0
                                                                                                                                                                                                                                                                                         Catalytic telomerase; diagnosis; disease; telomerase activity.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length 131;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   10.9%; Score 651; DB 2; Length 13 98.5%; Pred. No. 2.16-46; ive 2; Mismatches 0; Indels
                                                                                                                                                                                                                                                             Amino acid sequence of the specification.
                                                                                                                                                                             Ä
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Example 1; Page 14; 18pp; Japanese.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AAW56107 standard; protein; 988 AA.
                                                                                                                                                                          AAW97385 standard; protein; 131
                                                                                                                                                                                                                                                                                                                                                                                                       97JP-00207708
                                                                                                                                                                                                                                                                                                                                                                                                                                                           (MITU ) MITSUBISHI CHEM CORP.
                                                                                                                                                                                                                                                                                                                                                                                                                                97JP-00207708
                                                                                                                                                                                                                                  14-MAY-1999 (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
Best Local Similarity 98.5
Matches 128; Conservative
                                                                                              HVRKAFKSHV 130
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        671
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 FSVLNYERAR 130
                                                                            HVRKAFKSHV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       WPI; 1999-208111/18.
N-PSDB; AAX15924.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       FSVLNYERAR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Sequence 131 AA;
                                                                                                                                                                                                                                                                                                                                              JP11046768-A.
                                                                                                                                                                                                                                                                                                                     Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                       01-AUG-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                01-AUG-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            telomerase.
                                                                                                                                                                                                                                                                                                                                                                           23-FEB-1999,
                   594
                                                                                                                                                                                                      AAW97385;
                                                                           754
                                                                                                     121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  602
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       662
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AAW56107
                                                                                                                                              RESULT 85
AAW97385
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RESULT 86
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AAWS6107
ID AAWS
XX
AC AAWS
                                      임
                                                                         ò
                                                                                                                                                                                         ò
                                                                                               용
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ö
                   272
                                               868
                                                          -----XYKQXKGIPQGSSLSTILCSLYYGDLEXEEXXQPLRRDXLLLRLVD 318
                                                                                               DFLLVTPHLTHAKTFLRTLVR-GVPEYGCVVNLRKTVVNFPVEDEALGGTAFVQMPAHGL 927
                                                                                                                 useful in preparing a medicament for treating or preventing cancer, or in proparing a diagnostic for diagnosing cancer, e.g. breast cancer or prostate cancer.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     The present sequence represents a splice variant of a fragment of human telomerase reverse transcriptase (hTERT). The specification describes peptides derived from hTERT, which are capable of inducing a T cell response and are used in medicine. The hTERT peptides and nucleic acids encoding them are useful in preparing a medicament, which is a vaccine, an antisense molecule, or is capable of generating an antisense molecule in vivo, for treating cancer, or in preparing a diagnostic for diagnosing pancer. The cancer is, for example, breast cancer, prostate cancer, percental cancer, indiannel leukemia, lymphoma, ovarian cancer, cervical cancer, or a biliary tract
                                                                                                                                                                                                                                                                                                                                                                    Human; telomerase reverse transcriptase; hTERT; T cell response; vaccine; cancer.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            634 VNMDYVVGARTFRREKRAERLTSRVKALFSVLNYERARRPGLLGASVLGLDDIHRAWRTF 693
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             9
                                       810 LRFMCHHAVRIRGKSYVQCQGIPQGSILSTLLCSLCYGDMENKLFAG-IRRDGLLLRLVD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1 VNMDYVVGARTFRREKRAERLISRVKALFSVLNYERARRPGLLGASVLGLDDIHRAWRTF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gaps
                                                                                                                                                                                                                                                                                                                                      Splice variant of a human telomerase reverse transcriptase fragment.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ;
0
Query Match
11.2%; Score 667; DB 6; Length 174;
Best Local Similarity 100.0%; Pred. No. 1.4e-47;
Matches 130; Conservative 0; Mismatches 0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Saeboe-Larssen S;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 New polypeptides derived from human telomerase reverse useful in preparing a medicament for the second
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Moller M,
                                                                                                                                                                                                                                                       ABB99681 standard; protein; 174 AA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Disclosure; Fig 2; 56pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              16-MAY-2002; 2002WO-NO000176.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          21-MAY-2001; 2001GB-00012342.
                                                                                                                                                      928 FPWCGLLLDTRTLE 941
                                                                                                                                                                                MXWIGLSIDIRTLE 379
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Eriksen JA, Gaudernack G,
                                                                                                                                                                                                                                                                                                               (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            WPI; 2003-129380/12.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (GEMV-) GEMVAX AS.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Sequence 174 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                       WO200294312-A1.
                                                                                                                                                                                                                                                                                                                                                                                                              Homo sapiens.
                                                                                                                                                                                                                                                                                                             28-MAR-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   28-NOV-2002
                                                                                              869
                                                                                                                          319
                                                                                                                                                                                366
                                                                                                                                                                                                                                                                                   ABB99681;
                                                                   273
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  carcinoma
                                                                                                                                                                                                                                          ABB9968:
                                                                                                                                                                                                                           RESULT
                                                                g
                                                                                              ò
                                                                                                                       셤
                                                                                                                                                      ò
                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                    ò
```

ö

601

9

661

8 g

```
DERAMHUNGVQNDLVSTFPNYLISILE-SKNWQLLLEIIGSDAMHYLLSKGSIFEALPND 175
                                                                                                           --MMLQWIFPRQFGLINAFQVKQLHKVIPLVSQSTV---VPKRLLKVYPLIEQTAKRLHRI 312
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     629
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         557
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                671 WTKSSSEIFKMLKEHLSGHIVKIGNSQYLQKVGIPQGSILSSFLCHFYMEDLIDEYLSFT 730
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GARGGPPEAFTTSVRSYLPNTVTDALRGSGAWGLLLRRVGDDVLVHLLARCALFVLVAPS 165
                                                                               CAYOVCGPPLYQLGAATQARPPPHASGPRRRLGCERAWNHSVREAGVPLGLPAPGARRRG 225
                                                                                                                                                                                                                                                      EGALSGTRHS--HPSVGRQHHAGPPSTSRPPRPWDTPCPPVYAETKHF-LYSSGDKEQLR 342
                                                                                                                                                                                                                                                                                                                                         PSFLLSSLRPSLTG-----ARRLVETIFLGSRPWMPGTPRRL----PRLPQRYWQMRPL 392
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RQHSSPWQVYGFVRACLRRLVPPGLWGSRHNERRFLRNTKKFISLGKHAKLSLQELTWKM 512
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    513 SVRDCAWL---RRSPGVGCVPAAEHRLREEILAKFLHWLMSVYVVELLRSFFYVTETTFQ 569
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  630 LRPIVNMDYVVGARTFRREKRAERLTSRVKALFSVLNYERARRP-----GLLGASVLGL 683
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     D---DIHRAWRIF---VLRVRAQDPPPELYFVKVDVTGAYDTIPQDRLTEVIASIIKPQN 737
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         738 TYCVRRYAVVQKAAHGHVRKAFKSHVSTLTDLQPYMRQFVAHLQETSPLRDAVVIEQSSS 797
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | | : : | | : : | : : | TFFNESKKR--MPFFGFSVNMRSLDTLLACPKIDEALFNSTSVELTKHMGKSF----- 841
                                                                                                                                                                  GSASRSLPLPKRPRRGAAPEPERTPVGQGSWAHPGRTRGPSDRGFCVVSPARPAEEATSL 285
                                                                                                                                                                                                                                                                                                                                                                                                                        FLELLGNHAQCPYGVLLKTHCPLRAAVTPAAGVCAREKPQGSVAAPEEEDTDPRRLVQLL 452
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  -----KIL 334
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          LNEASSGLFDVFLRFMCHHAVRIRGKSYVQCQGIPQGSILSTLLCSLCYGDMENKLFAGI 857
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TAFVQMPAHGLFPWCGLLLDTRTLEV----QSDYSSYARTSIRASLTFNRGFKAGRNMR 971
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 KNRLFFYRKSVWSKLQSIGIROHLKRVQLRELSEAEVRQHREARPALLTSRLRFIPKPDG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         RRDG-LLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGCVVNLRKTVVNFPVEDEALGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            972 RKLFGVLRLKCHS---LFLDLQVNSLQTVCTNIYKI-----LLLQAY 1010
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        --FYKILRSSLASFAQVFIDITHNSKFNSCCNIYRLGYSMCMRAQAY 886
                                                                                                                                                                                                            201 RTIETSITONKSARK-------EVSW----
                                                                                                                                                                                                                                                                                    -NSISISRFSIFYRSSYKK-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                     313 SLSKVYNH-YCPY---IDTH-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ż
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ADG70135 standard; protein; 816
                                                                                                           1: | ||::
176 NYLQISGIPLFK-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     11-MAR-2004
106
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   570
                                                                                   166
                                                                                                                                                                  226
                                                                                                                                                                                                                                                      982
                                                                                                                                                                                                                                                                                               220
                                                                                                                                                                                                                                                                                                                                         343
                                                                                                                                                                                                                                                                                                                                                                                 257
                                                                                                                                                                                                                                                                                                                                                                                                                          393
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              453
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          453
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     684
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   919
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            198
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              858
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       791
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ADG70135;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          842
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RESULT 87
                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                   8
                                                                                                                셤
                                                                                                                                                                à
                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       The present sequence is Schizosaccharomyces pombe trt designated tezl
from the present invention. The present invention also describes the
following methods: (A) determining whether a test compound is a modulator
of hTRT, by detecting the change in hTRT recombinant protein or
cof hTRT, by detecting the change in hTRT recombinant protein or
cecombinant telomerase by contacting a protein preparation of hTRT with a
telomerase RNA component; (C) detection of the hTRT RNA or protein in a
cample by binding a relevant probe to the sample and detecting the
complex formed or in the case of RNA detection, amplifying the product
and correlating the presence of complex or amplification product with
complex formed or in the sample, and (D) increasing the proliferation of a
vertebrate cell by increasing hTRT expression; and (E) the use of an
certabrate sample in and (D) increasing the proliferation to
create a medicament that inhibits ageing. A protein preparation of hTRT
and the polynucleotide encoding hTRT can be used in the manufacture of
medicaments for inhibiting the effect of ageing or cancer. Inhibitors of
telomerase activity can be used to treat conditions that are associated
with high telomerase activity. A protein preparation of hTRT can also be
used in the new methods
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     59 IFLHSTVVGFDSKPDEGV-QFSSPKCSQSELIANVVKQMFDESFERRNLLMKGFSMNHE 116
                                                                               Human; telomerase reverse transcriptase; hTRT; TRT; diagnosis; prognosis; cell proliferation; cancer; ageing; ribonucleoprotein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ----VCVPWDARPPPAAPSFRQVSCLK-ELVARVLQRLCERG---AKNVLAFGFAL-LD 105
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PRCRAVRSLLRSHYREVLPLATFVRRLGPQGWRLVQRGDPAAFRALVAQCL----- 55
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          cell
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Harley CB;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Pure and recombinant human Telomerase Reverse Transcriptase and its variants - are useful in the diagnosis, prognosis and treatment of c proliferation conditions especially cancer and ageing.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match 10.0%; Score 594; DB 2; Length 988; Best Local Similarity 22.3%; Pred. No. 2.3e-40; Matches 238; Conservative 202; Mismatches 379; Indels 248;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Morin GB,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Chapman KB,
                                         pombe trt protein sequence designated tezl.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Example 1; Fig 51; 387pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Lingner J, Nakamura T,
                                                                                                                                                                                                                                                                                                             96US-00044419.
97US-00846117.
97US-00851843.
97US-00854050.
97US-0091312.
97US-00915503.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                UNIV TECHNOLOGY CORP.
                                                                                                                                                                                                                                                                         97GB-00020890
(first entry)
                                                                                                                                            Schizosaccharomyces pombe
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1998-171633/16.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CORP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           N-PSDB; AAV22423.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Sequence 988 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GERON
13-AUG-1998
                                                                                                                                                                                                                                                                         01-OCT-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                14-AUG-1997;
                                                                                                                                                                                        3B2317891-A
                                                                                                                                                                                                                                08-APR-1998
                                                                                                                                                                                                                                                                                                                                                                                                  09-MAY-1997
14-AUG-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                            14-AUG-1997
                                                                                                                                                                                                                                                                                                                                                                                 36-MAY-1997
                                                                                                                                                                                                                                                                                                                                       18-APR-1997
                                                                                                                                                                                                                                                                                                                                                           25-APR-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Andrews WH;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           26
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TR,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (UYTE-)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (GERO-)
```

g 8 g

```
WO2003095605-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence 586 AA;
                                                                                                                                                        HIV RT/hTERT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     tumor growth.
                                                                                                                         11-MAR-2004
                                                                                                                                                                                                                                                                                                                                                      20-NOV-2003
                                                                                          ADG70131;
                                                                                                                                                                                                                                                        Chimeric.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Moll J,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               73
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             96
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             743
                                          ADG70131
                                                          8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 bind and inhibit
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       IPKPDGLRPIVNMDYVVGARTFRR-EKRAERLTSRVKALFSVLNYERARRPGLLGASVLG 682
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              742
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           472
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       The invention relates to the isolation of compounds that bind and inhibit the activity of HIV-1 reverse transcriptase (RT) or human telomerase reverse transcriptase (HTRRT). The method involves determining these compounds using a HIV-1 RT/HTRT chimeric construct containing the catalytic sites of each enzyme. The nucleic acid is useful for treating or preventing unregulated cellular growth, including cancer call and tumor growth. It is also useful in gene therapy. Compounds that inhibit telomerase activity can be used to treat cancer. The vectors of the invention can be used to amplify DNA or RNA encoding HIV-RT/HTRT and/or express DNA which encodes HIV-RT/HTRT. This sequence corresponds to a chimeric HIV-RT/HTRT protein construct.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              325
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     743 RYAVVQKAAHGHVRKAFKSHVSTLTDLQPYMRQFVAHLQETSPLRDAVVIEQSSSLNEAS 802
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      KYT------SINNET 377
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             857
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PG----IRY-----EPFKKQ 412
                                gene therapy; reverse transcriptase-Inhibitor; HIV-1;
srase reverse transcriptase; hTERT; chimeric; catalytic site;
                                                                                                                                                                                                                                                                                                                                                                                           New HIV-1 Reverse Transcriptase and human Telomerase Reverse Transcriptase proteins and nucleic acids, useful in gene therapy or for treating or preventing unregulated cellular growth, e.g. cancer cell or tumor growth.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      LDDIHRAWRTFVLRVRAQDPPPELYFVKVDVTGAYDTIPQDRLTEVIASIIKPQNTYCVR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    803 SGLFDVFLRFMCHHAVRIRGKSYVQCQGIPQG----SILSTLLCSLCYGDMENKLFAGI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    RRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGCVVNLRKTVVNFPVEDEALGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            413 NPDILLIRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGSVVNLRKTVVNFPVEDEALGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ------WRIFVLRVRAQDPPPELYFVKVDVIGAYDTIPWDE-------DFR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           33; Indels 136; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         9.5%; Score 565; DB 8; Length 816;
43.9%; Pred. No. 4.9e-38;
tive 14; Mismatches 33; Indels 13
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         IDKPOGLRKLVD-----FRELNKRTODF------
                              cytostatic; gene therapy; reverse transcript
human telomerase reverse transcriptase; hTBR
unregulated cellular growth; cancer; tumor.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AFVOMPAHGLFPWCGLLLDTRTLEVQ 943
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Claim 1; SEQ ID NO 25; 141pp; English.
HIV RT/hTERT chimeric construct #16
                                                                                                                                                                                                                                                                                                                                 à
                                                                                                                              Human immunodeficiency virus 1.
                                                                                                                                                                                                                                                                                                                               Stouten
                                                                                                                                                                                                                              14-APR-2003; 2003WO-EP003874.
                                                                                                                                                                                                                                                              08-MAY-2002; 2002US-0378820P.
                                                                                                                                                                                                                                                                                            (PHAA ) PHARMACIA ITAL SPA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Best Local Similarity 43.25
Matches 143; Conservative
                                                                                                                                                                                                                                                                                                                            Schnuchel A,
                                                                                                                                                                                                                                                                                                                                                             WPI; 2004-012095/01.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Sequence 816 AA;
                                                                                                                                                               WO2003095605-A2
                                                                                                                Homo sapiens
                                                                                                                                                                                             20-NOV-2003.
                                                                                               Chimeric
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     303
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      683
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
Best Local (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        326
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       364
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     828
                                                                                                                                                                                                                                                                                                                              Moll J,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       378
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     918
```

8 6

6 6 6 6 6 6

```
The invention relates to the isolation of compounds that bind and inhibit he activity of HIV-1 reverse transcriptase (RT) or human telomerase reverse transcriptase (RT) or human telomerase coverse transcriptase (hTERT). The method involves determining these compounds using a HIV-1 RT/hTERT chimmeric construct containing the catalytic sites of each enzyme. The nucleic acid is useful for treating or preventing unregulated cellular growth, including cancer call and tumor growth. It is also useful in gene therapy. Compounds that inhibit telomerase activity can be used to treat cancer. The vectors of the invention can be used to amplify DNA or RNA encoding HIV-RT/HTERT and/or express DNA which encodes HIV-HT/HTERT. This sequence corresponds to a chimeric HIV-RT/hTERT protein construct.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           624 IPKPDGLRPIVNMDYVVGARTFRR-EKRABRLTSRVKALFSVLNYERARRPGLLGASVLG 682
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        742
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         133
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    147
                                                                                                                                                                                                                                                             Cytostatic, gene therapy, reverse transcriptase-inhibitor, HIV-1, human telomerase reverse transcriptase; hTERT; chimeric; catalytic site; unregulated cellular growth; cancer; tumor.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                RYAVVOKAAHGHVRKAFKSHVSTLTDLQPYMRQFVAHLQETSPLRDAVVIEQSSSLNEAS 802
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     857
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              683 LDDIHRAWRIFVLRVRAQDPPPELYFVKVDVTGAYDTIPQDRLTEVIASIIKPQNTYCVR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ------WRIFVLRVRAQDPPPELYFVKVDVTGAYDIIPWDE------DFR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           803 SGLFDVFLRFMCHHAVRIRGKSYVQCQGIPQG----SILSTLLCSLCYGDMENKLFAGI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 New HIV-1 Reverse Transcriptase and human Telomerase Reverse
Transcriptase proteins and nucleic acids, useful in gene therapy or f
treating or preventing unregulated cellular growth, e.g. cancer cell
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             134 KYT------AF----SINNET
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     34; Indels 136; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   9.3%; Score 555; DB 8; Length 586; 43.6%; Pred. No. 2.1e-37;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            IDKPDGLRKLVD-----PRELNKRTQDF------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 14; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Claim 1; SEQ ID NO 21; 141pp; English.
                                                                                                                                                                                                   chimeric construct #12
          Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ä
          586
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Stouten
                                                                                                                                                                                                                                                                                                                                                                                                                                 Homo sapiens.
Human immunodeficiency virus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         14-APR-2003; 2003WO-EP003874.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              08-MAY-2002; 2002US-0378820P,
ADG70131 standard; protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (PHAA ) PHARMACIA ITAL SPA.
                                                                                                                                  (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Best Local Similarity 43.6
Matches 142; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Schnuchel A,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       WPI; 2004-012095/01.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
```

917

```
The invention relates to the isolation of compounds that bind and inhibit the activity of HIV-1 reverse transcriptase (RT) or human telomerase reverse transcriptase (HTRT). The method involves determining these compounds using a HIV-1 RT/hTRT chimmeric construct containing the catalytic sites of each enzyme. The nucleic acid is useful for treating tor preventing unregulated cellular growth, including cancer cell and tumor growth. It is also useful in gene therapy. Compounds that inhibit telomerase activity can be used to treat cancer. The vectors of the invention can be used to amplify DNA or RNA encoding HIV-RT/hTRRT and/or express DNA which encodes HIV-RT/hTRRT. This sequence corresponds to a chimeric HIV-RT/hTRRT protein construct.
--- DFR 350
                                                                                                                                365 PG----IRY-----EPFKKQ 399
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            cytostatic; gene therapy; reverse transcriptase-Inhibitor; HIV-1; human telomerase reverse transcriptase; hTERT; chimeric; catalytic site; unregulated cellular growth; cancer; tumor.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     New HIV-1 Reverse Transcriptase and human Telomerase Reverse Transcriptase proteins and nucleic acids, useful in gene therapy or for treating or preventing unregulated cellular growth, e.g. cancer cell or
                                                                                                                                                                                     400 NPDILLIRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGSVVNLRKTVVNFPVEDEALGGT
                               RYAVVQKAAHGHVRKAFKSHVSTLTDLQPYMRQFVAHLQETSPLRDAVVIEQSSSLNEAS
                                                                 ----TIP-----SINNET
                                                                                               SGLFDVFLRFMCHHAVRIRGKSYVQCQGIPQG----SILSTLLCSLCYGDMENKLFAGI
                                                                                                                                                                  858 RRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGCVVNLRKTVVNFPVEDEALGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DB 8; Length 816;
-----WRTFVLRVRAQDPPPELYFVKVDVTGAYDTIPWDE--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    9.3%; Score 555;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Example 1; SEQ ID NO 23; 141pp; English.
                                                                                                                                                                                                                                                        460 AFVQMPAHGLFPWSGLLLDTRTLEVQ 485
                                                                                                                                                                                                                                   918 AFVQMPAHGLFPWCGLLLDTRTLEVQ 943
                                                                                                                                                                                                                                                                                                                                                                                                                                                            HIV RT/hTERT chimeric construct #14.
                                                                                                                                                                                                                                                                                                                                                       ADG70133 standard; protein; 816 AA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Stouten P;
                                                           351 KYT-----AF----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Homo sapiens.
Human immunodeficiency virus 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   14-APR-2003; 2003WO-EP003874.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     08-MAY-2002; 2002US-0378820P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (PHAA ) PHARMACIA ITAL SPA.
                                                                                                                                                                                                                                                                                                                                                                                                                            (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Schnuchel A,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       WPI; 2004-012095/01.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sequence 816 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                WO2003095605-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          tumor growth.
                                                                                                                                                                                                                                                                                                                                                                                                                          11-MAR-2004
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 20-NOV-2003
                               743
                                                                                                 803
                                                                                                                                                                                                                                                                                                                                                                                           ADG70133;
313
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Chimeric
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Moll J,
                                                                                                                                                                                                                                                                                                                                         ADG701:
                            Š
                                                             셤
                                                                                             ઠે
                                                                                                                           g
                                                                                                                                                                  ò
                                                                                                                                                                                                  유
                                                                                                                                                                                                                                 à
                                                                                                                                                                                                                                                                   a
                                                                                                                                                                                                                                                                                                                                                                                         917
                                             242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              The invention relates to the isolation of compounds that bind and inhibit the activity of HIV-1 reverse transcriptase (RT) or human telomerase reverse transcriptase (HTRT). The method involves determining these compounds using a HIV-1 RT/MTRT chimeric construct containing these or preventing unregulated cellular growth, including cancer cell and tumor growth. It is also useful in gene therapy. Compounds that inhibit telomerase activity can be used to treat cancer. The vectors of the invention can be used to amplify DNA or RNA encoding HIV-RT/MTRT and/or express DNA which encodes HIV-RT/MTRT. This sequence corresponds to a chimeric HIV-RT/MTRT protein construct.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                11;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               683 LDDIHRAWRIFVLRVRAQDPPPELYFVKVDVTGAYDTIPQDRLTEVIASIIKPQNTYCVR 742
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              IPKPDGLRPIVNMDYVVGARTFRR-EKRAERLTSRVKALFSVLNYERARRPGLLGASVLG 682
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 cytostatic; gene therapy, reverse transcriptase-Inhibitor; HIV-1; human telomerase reverse transcriptase; hTERT; chimeric; catalytic site; unregulated cellular growth; cancer; tumor.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Transcriptase proteins and nucleic acids, useful in gene therapy or for treating or preventing unregulated cellular growth, e.g. cancer cell or
                               183 NPDILLIRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGSVVNLRKTVVNFPVEDEALGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            34; Indels 136;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 New HIV-1 Reverse Transcriptase and human Telomerase Reverse
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           9.3%; Score 555; DB 8; Length 803; 43.6%; Pred. No. 3.4e-37; ive 14; Mismatches 34; Indels 1:
                                                                               943
                                                                                               243 AFVQMPAHGLFPWSGLLLDTRTLEVQ 268
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Claim 1; SEQ ID NO 24; 141pp; English.
                                                                           AFVOMPAHGLFPWCGLLLDTRTLEVQ
                                                                                                                                                                                                                                                                                                   HIV RT/hTERT chimeric construct #15.
                                                                                                                                                                                              ADG70134 standard; protein; 803 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ď,
                                                                                                                                                                                                                                                                                                                                                                                                                                         Human immunodeficiency virus 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Stouten
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             14-APR-2003; 2003WO-EP003874.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           08-MAY-2002; 2002US-0378820P
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (PHAA ) PHARMACIA ITAL SPA.
                                                                                                                                                                                                                                                                   (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             9.3%
Best Local Similarity 43.6%
Matches 142; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Schnuchel A,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                WPI; 2004-012095/01.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Sequence 803 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          WO2003095605-A2.
                                                                                                                                                                                                                                                                                                                                                                                                                          Homo sapiens.
                                                                                                                                                                                                                                                                   11-MAR-2004
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    tumor growth
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          20-NOV-2003
                                                                                                                                                                                                                                 ADG70134;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              624
                                                                           918
                                                                                                                                                                                                                                                                                                                                                                                                         Chimeric
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Moll J,
                                                                                                                                                                  RESULT 89
                                                                                                                                                                                  ADG70134
                                          g
                                                                                                             셤
                                                                                                                                                                                                                 à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ð
            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                8
```

leukemia, lymphoma, ovarian cancer, cervical cancer, or a biliary tract

carcinoma

```
682
                                                                            742
                                                                                                             743 RYAVVQKAAHGHVRKAFKSHVSTLTDLQPYMRQFVAHLQETSPLRDAVVIEQSSSLNEAS 802
                                                                                                363
                                                                                                                                 KYT------SINNET 377
                                                                                                                                                                                                 917
                                                                                                                                                           857
                                                                                                                                                                        378 PG----IRX-----EPFKKQ 412
                                                                                                                                                                                                            413 NPDILLERLVDDFLLVTPHLTHAKTFLRTLVRGVPEXGSVVNLRKTVVNPPVEDEALGGT 472
                                                                                                                                                                                                                                                                                                                                                                                       Human; telomerase reverse transcriptase; hTERT; T cell response; vaccine;
                               IPKPDGLRPIVNMDYVVGARTFRR-EKRAERLTSRVKALFSVINYERARRPGLLGASVLG
                                                                      683 LDDIHRAWRIFVLRVRAQDPPPELYFVKVDVTGAYDTIPQDRLTEVIASIIKPQNTYCVR
                                                                                                                                                    SGLFDVFLRFMCHHAVRIRGKSYVQCQGIPQG-----SILSTLLCSLCYGDMENKLFAGI
                                                                                                ----DFR
                                                                                                                                                                                            358 RRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGCVVNLRKTVVNFPVEDEALGGT
                Gaps
                                                                                                                                                                                                                                                                                                                                                                   Splice variant of a human telomerase reverse transcriptase fragment.
             Indels 136;
                                                                                     -----PRTFVLRVRAQDPPBLYFVKVDVTGAYDTIPWDE-----
  i; Pred. No. 3.4e-37;
14; Mismatches 34;
                                                   303 IDKPDGLRKLVD-----FRELNKRTQDF--
                                                                                                                                                                                                                                    918 AFVQMPAHGLFPWCGLLLDTRTLEVQ 943
                                                                                                                                                                                                                                                473 AFVQMPAHGLFPWSGLLLDTRTLEVQ 498
                                                                                                                                                                                                                                                                                                        ABB99682 standard; protein; 108 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 16-MAY-2002; 2002WO-NO000176.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    21-MAY-2001; 2001GB-00012342.
   43.68;
                                                                                                                                                                                                                                                                                                                                                 (first entry)
           142; Conservative
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (GEMV-) GEMVAX AS.
                                                                                                                                                                                                                                                                                                                                                                                                                                         WO200294312-A1.
                                                                                                                                                                                                                                                                                                                                                                                                                       Homo sapiens.
                                                                                                                                                                                                                                                                                                                                                28-MAR-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                             28-NOV-2002
                               624
                                                                                           326
                                                                                                                                 364
                                                                                                                                                      803
                                                                                                                                                                                                                                                                                                                             ABB99682;
                                                                                                                                                                                                                                                                                                                                                                                                     cancer.
          Matches
                                                                                                                                                                                                                                                                                               ABB99682
                                                                                       요
                               ठ
                                                 용
                                                                     ò
                                                                                                             8
                                                                                                                              셤
                                                                                                                                                                       요
                                                                                                                                                                                                              유
                                                                                                                                                   à
                                                                                                                                                                                           ò
                                                                                                                                                                                                                                    ઠે
```

```
The present invention relates to a polypeptide comprising a 20 amino acid sequence derived from human telomerase catalytic subunit (or human telomerase reverse transcriptase, hTPRT) amino acid residues 537-556, or telomerase reverse transcriptase, hTPRT) amino acids and at least two fragments thereof comprising at least 10 amino acids and at least two consists thereof comprising at least 10 amino acids and at least two also describes a polypeptide having the above 20 amino acid peptide casquence as additional C- and/or N-terminal sequences on a fragment of hTERT which is not more than 100 amino acids of hTERT. The polypeptides of the invention are useful in a pharmaceutical composition or in a vaccine for preventing or treating cancer in populations of individuals having varying HLA profiles. The polypeptides are also useful in a closertal, lung, ovarian or cervical cancer, malignant melanoma, lung, ovarian or cervical cancer, malignant melanoma, leukaemia, lymphoma or biliary tract carcinoma. The polypeptides or encoding polymucleotide sequences are useful for performing identity, sequence homology and/or hybridisation studies, for predicting structure
                                                                                                                                   ų,
                                                                                                                                                                                                                                                        753
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Human; telomerase catalytic subunit; hTERT; human leukocyte antigen; human telomerase reverse transcriptase; HLA epitope; cancer; HLA profile; breast cancer; parcreatic cancer; colorectal cancer; lung cancer; covarian cancer; cervical cancer; malignant melanoma; leukaemia; lymphoma; biliary tract carcinoma; anti-cancer; mutant; cytostatic; HLA class I epitope; HLA class II epitope; mutein.
                                                                                                                                                                                                     9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     New polypeptide with an additional C-terminal and/or N-terminal sequence, useful for preparing anti-cancer vaccines.
                                                                                                                                                                                    694 VLRVRAQDPPPELYFVKVDVTGAYDTIPQDRLTEVIASIIKPQNTYCVRRYAVVQKAAHG
                                                                                                                                                            634 VNMDYVVGARTFRREKRAERLTSRVKALFSVLNYERARRPGLLGASVLGLDDIHRAWRTF
                                                                                                                                 Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 hTERT fragment with HLA containing polypeptide at its C-terminus.
                                                                                                                                 12;
                                                                                              Length 108;
                                                                                                                              0; Indels
                                                                                        Score 535; DB 6;
Pred. No. 9.5e-37;
                                                                                                                              0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Moller M;
                                                                                                                                                                                                                                                                                                                                                        ABG71628 standard; protein; 100 AA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Disclosure; Fig 2; 62pp; English.
                                                                                          9.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        19-FEB-2002; 2002WO-NO000069.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         02-MAR-2001; 2001GB-00005238.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gaudernack G,
                                                                                                                                                                                                                                                                                                                                                                                                                                 (first entry)
                                                                                                                              Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   WPI; 2002-750459/81.
                                                                                                       Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (GEMV-) GEMVAX AS.
                                                    Sequence 108 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                WO200270679-A2.
                                                                                                                                                                                                                                                                                                                                                                                                                                 09-JAN-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 sapiens.
                                                                                                       Best Local Clar Matches 108;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      12-SEP-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Eriksen JA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Homo sapier
Synthetic.
                                                                                                                                                                                                                                                                   61
                                                                                        Query Match
                                                                                                                                                                                                                                                                                                                                                                                             ABG71628;
                                                                                                                                                                                                                                                                                                                          RESULT
ន្តដ្ឋនូ
                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                 셤
                                                                                                                                                              ò
                                                                                                                                                                                                                                 ò
```

The present sequence represents a splice variant of a fragment of human telomerase reverse transcriptase (hTERT). The specification describes peptides derived from HTERT, which are capable of inducing a T cell response and are used in medicine. The HTERT peptides and nucleic acids encoding them are useful in preparing a medicament, which is a vaccine, an antisense molecule, or is capable of generating an antisense molecule in vivo, for treating cancer, or in preparing a diagnostic for diagnosting cancer. The cancer is, for example, breast cancer, prostate cancer, pancreatic cancer, colo-rectal cancer, lung cancer, malignant melanoma,

or in

New polypeptides derived from human telomerase reverse transcriptase, useful in preparing a medicament for treating or preventing cancer, o preparing a diagnostic for diagnosing cancer, e.g. breast cancer or

Disclosure, Fig 2; 56pp; English.

prostate cancer

polypeptides derived from human telomerase

Saeboe-Larssen S;

Moller M,

Gaudernack G,

Eriksen JA,

WPI; 2003-129380/12.

8888888

8 d 8 g

```
61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ADG70112;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Chimeric
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ADG70112
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             RESULT
              888888888
                                                                                                                                                                                                                                                                                                                                                                         요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ઠ
                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                             ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         The present invention relates to a polypeptide comprising a 20 amino acid acquence derived from human telomerase catalytic subunit (or human telomerase catalytic subunit (or human telomerase reverse transcriptase, hTBRT) amino acid residues 537-556, or fragments thereof comprising at least 10 amino acids and at least two human leukocyte antigen (HLA) class I or class II epitopes. The invention also describes a polypeptide having the above 20 amino acid peptide sequence as additional C- and/or N-terminal sequences on a fragment of hTBRT which is not more than 100 amino acids of hTBRT. The polypeptides of the invention are useful in a pharmaceutical composition or in a vaccine for preventing or treating cancer in populations of individuals having varying HLA profiles. The polypeptides are also useful in a diagnostic kit for diagnostic ancers such as breast, pancreatic, colorectal, lung, ovarian or cervical cancer, malignant melanoma, leukaemia, lymphoma or biliary tract carcinoma. The polypeptides or
and/or function (e.g. anti-cancer activity), or for screening methods in drug development or drug screening procedures. The present sequence represents a hTERT fragment with the 20 amino acid HLA epitope containing polypeptide at its C-terminus
                                                                                                                                                                                                                                                                             457 SPWQVYGFVRACLRRLVPPGLWGSRHNERRFLRNTKKFISLGKHAKLSLQELTWKMSVRD 516
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Human; telomerase catalytic subunit; hTERT; human leukocyte antigen; human telomerase reverse transcriptase; HLA epitope; cancer; HLA profile; breast cancer; pancreatic cancer; colorectal cancer; lung cancer; by overtan cancer; colovertan cancer; colorectal cancer; human cancer; hu
                                                                                                                                                                                                                                                                                                                            9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         New polypeptide with an additional C-terminal and/or N-terminal sequence,
                                                                                                                                                                                                                                                                                                        1 SPWQVYGFVRACLRRLVPPGLWGSRHNERRFLRNTKKFISLGKHAKISLQELTWKKSVRG
                                                                                                                                                                                                                                  Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         hTERT fragment with HLA containing polypeptide at its N-terminus.
                                                                                                                                                                                                                                ö
                                                                                                                                                                              Score 534; DB 5; Length 100;
Pred. No. 1e-36;
1; Mismatches 1; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       biliary tract carcinoma; anti-cancer; mutant; cytostatic; HLA class I epitope; HLA class II epitope; mutein.
                                                                                                                                                                                                                                                                                                                                                                           556
                                                                                                                                                                                                                                                                                                                                                                                                       CAWLRRSPGVGCVPAAEHRLREEILAKFLHWLMSVYVVEL 100
                                                                                                                                                                                                                                                                                                                                                                         CAWLRRSPGVGCVPAAEHRLREEILAKFLHWLMSVYVVEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  for preparing anti-cancer vaccines.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Moller M;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ABG71627 standard; protein; 100 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Disclosure; Fig 1; 62pp; English.
                                                                                                                                                                              9.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 19-FEB-2002; 2002WO-NO000069.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              02-MAR-2001; 2001GB-00005238.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gaudernack G,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (first entry)
                                                                                                                                                                                                                                Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          WPI; 2002-750459/81.
                                                                                                                                                                                                  Local Similarity
tes 98; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (GEMV-) GEMVAX AS.
                                                                                                                                 Sequence 100 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   WO200270679-A2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            09-JAN-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Eriksen JA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  12-SEP-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Synthetic.
                                                                                                                                                                                                                                                                                                                                                                         517
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ABG71627;
                                                                                                                                                                              Query Match
                                                                                                                                                                                                            Best Loca
Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RESULT 93
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Ношо
```

```
ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              The invention relates to the isolation of compounds that bind and inhibit the activity of HIV-1 reverse transcriptase (RT) or human telomerase reverse transcriptase (RT) or human telomerase compounds using a HIV-1 RT/hTRRT chimmeric construct containing these catalytic sites of each enzyme. The nucleic acid is useful for treating try preventing unregulated cellular growth, including cancer cell and tumor growth. It is also useful in gene therapy. Compounds that inhibit telomerase activity can be used to treat cancer. The inhibit invention can be used to amplify DNA or RNA encoding HIV-RT/hTRRT and/or express DNA which encodes HIV-RT/hTRRT. This sequence corresponds to a chimmeric HIV-RT/hTERT protein.
                         sequence homology and/or hybridisation studies, for predicting structure and/or function (e.g. anti-cancer activity), or for screening methods in drug development or drug screening procedures. The present sequence represents a hTBRF fragment with the 20 amino acid HiA epitope containing
                                                                                                                                                                                                                                                                                                                                                                                                                                                537 REELLAKFLHWLMSVYVVELLRSFFYVTETTFQKNRLFFYRKSVWSKLQSIGIRQHLKRV 596
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           cytostatic; gene therapy; reverse transcriptase-Inhibitor; HIV-1;
human telomerase reverse transcriptase; hTERT; chimeric; catalytic site;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           New HIV-1 Reverse Transcriptase and human Telomerase Reverse Transcriptase proteins and nucleic acids, useful in gene therapy or for treating or preventing unregulated cellular growth, e.g. cancer cell or
encoding polynucleotide sequences are useful for performing identity,
                                                                                                                                                                                                                                                                                                                                                                                      ..
0
                                                                                                                                                                                                                                                                                                           Length 100;
                                                                                                                                                                                                                                                                                                                                                                               Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            597 QLRELSEAEVRQHREARPALLTSRLRFIPKPDGLRPIVNM 636
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             8.5%; Score 509; DB 5; I
100.0%; Pred. No. 1.3e-34;
iive 0; Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         unregulated cellular growth; cancer; tumor.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Claim 1, SEQ ID NO 2; 141pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Ź
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ä
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ADG70112 standard; protein; 576
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    HIV-1 RT/hTERT chimera protein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Homo sapiens.
Human immunodeficiency virus 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Stouten
                                                                                                                                                                  polypeptide at its N-terminus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        14-APR-2003; 2003WO-EP003874.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             08-MAY-2002; 2002US-0378820P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (PHAA ) PHARMACIA ITAL SPA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (first entry)
                                                                                                                                                                                                                                                                                                                                                                                   Matches 100; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Moll J, Schnuchel A,
                                                                                                                                                                                                                                                                                                   Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   WPI; 2004-012095/01.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              N-PSDB; ADG70111
                                                                                                                                                                                                                                          Sequence 100 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   WO2003095605-A2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    tumor growth.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               11-MAR-2004
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       20-NOV-2003
```

```
FAGIRROGLILRIVDDFILLYTPHLTHAKTFLRTLVRGVPEYGCVVNLRKTVVNFPVEDEA 913
reverse transcriptase (hTERT). The method involves determining these compounds using a HIV-1 RT/hTERT chimeric construct containing the catalytic sites of each nazyme. The nucleic acid is useful for treating or preventing unregulated cellular growth, including cancer cell and tumor growth. It is also useful in gene therapy. Compounds that inhibit telomerase activity can be used to treat cancer. The vectors of the invention can be used to amplify DNA or RNA encoding HIV-RT/hTERT and/or express DNA which encodes HIV-RT/hTERT This sequence corresponds to a chimeric HIV-RT/hTERT protein construct.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         cytostatic; gene therapy; reverse transcriptase-Inhibitor; HIV-1; human telomerase reverse transcriptase; hTERT; chimeric; catalytic site; unregulated cellular growth; cancer; tumor.
                                                                                                                                                                                                                                                                                                                    739 YCVRRYAVVQKAAHGHVRKAFKSHVSTLTDLQPYMRQFVAHLQETSPLRDAVVIEQSSSL
                                                                                                                                                                                                                                                                                                                                                                                           DDIHRAWRTFVLRVRAQDPPP-----ELYFVKVDVTGAYDTIPQDRLTEVIASIIKPQNT
                                                                                                                                                                                                                                                                                                                                                                        NEASSGLFDVFLRFMCHHAVRIRGKSYVQCQGIPQG----SILSTLLCSLCYGDMENKL
                                                                                                                                                                                                               624 IPKPDGLRPIVNMDYVVGARTFRREKRAERLTSRVKALFSVLNYERARRPGLLGASVLGL
                                                                                                                                                                                         Gape
                                                                                                                                                                                      38; Indels 144;
                                                                                                                                                             Length 592;
                                                                                                                                                                                                                                       IDKPDGLRKLVD-----PR----BLNKRTQDFWEV----
                                                                                                                                                             Score 478; DB 8;
Pred. No. 6.6e-31;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               943
                                                                                                                                                                                      16; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LGGTAFVQMPAHGLFPWCGLLLDTRTLEVQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Ą
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 HIV RT/hTERT chimeric construct #2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ь;
Б
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ADG70121 standard; protein; 605
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Homo sapiens.
Human immunodeficiency virus 1.
                                                                                                                                                                                                                                                                                                                                              -DFRKYT------ÀF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Stouten
                                                                                                                                                            8.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    14-APR-2003; 2003WO-EP003874
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              08-MAY-2002; 2002US-0378820P
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (PHAA ) PHARMACIA ITAL SPA
                                                                                                                                                                          Best Local Similarity 40.09
Matches 132; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Schnuchel A,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          WPI; 2004-012095/01
                                                                                                                                   Sequence 592 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  WO2003095605-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        11-MAR-2004
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            20-NOV-2003
                                                                                                                                                                                                                                       79
                                                                                                                                                                                                                                                                 684
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ADG70121;
                                                                                                                                                                                                                                                                                           109
                                                                                                                                                                                                                                                                                                                                              137
                                                                                                                                                                                                                                                                                                                                                                                                 150
                                                                                                                                                            Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                           854
                                                                                                                                                                                                                                                                                                                                                                                                                                                    185
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            914
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      245
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Chimeric
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Moll J,
    88888888888888
                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                ઠે
                                                                                                                                                                                                                                                                 à
                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                          임
                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       13;
                                                                                                                                                                       120
                                                                                                                                                                                          YCVRRYAVVQKAAHGHVRKAFKSHVSTLTDLQPYMRQFVAHLQETSPLRDAVVIEQSSSL 798
                                                                                                                                                                                                                          133
                                                                                                                                                                                                                                                    853
                                                                                                                                                                                                                                                                            168
                                                                                                                                                                                                                                                                                                      913
                                                                                                                                                                                                                                                                                                                        169 FKKQNPDILLIRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGCVVNLRKTVVNFPVEDEA 228
                                                                                                                   92
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  The invention relates to the isolation of compounds that bind and inhibit the activity of HIV-1 reverse transcriptase (RT) or human telomerase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  cytostatic, gene therapy, reverse transcriptase-Inhibitor, HIV-1, human telomerase reverse transcriptase, hTERT, chimeric, catalytic site, unregulated cellular growth, cancer; tumor.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              for
                                                                                     624 IPKPDGLRPIVNMDYVVGARTFRREKRAERLTSRVKALFSVLNYERARRPGLLGASVLGL
                                                                                                                                       DDIHRAWRTFVLRVRAQDPPP----ELYFVKVDVTGAYDTIPQDRLTEVIASIIKPQNT
                                                                                                                                                          -----PHPAGLKKQNGYFVKVDVTGAYDTIPWDE
                                                                                                                                                                                                                                              NEASSGLFDVFLRFMCHHAVRIRGKSYVQCQGIPQG----SILSTLLCSLCYGDMENKL
                                                                                                                                                                                                                                                                     134 NNETPG----IRY-----EP
                                                                                                                                                                                                                                                                                                 FAGIRRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGCVVNLRKTVVNFPVEDEA
                                                                 Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          New HIV-1 Reverse Transcriptase and human Telomerase Reverse
Transcriptase proteins and nucleic acids, useful in gene therapy or f
treating or preventing unregulated cellular growth, e.g. cancer cell
                                                             38; Indels 144;
                                                                                                                                                                                                                       -DFRKYT-----TIP---
                                      Length
                                                                                                                IDKPÖGLRKLVD-----FR----ELNKRTQDFWEV---
                                                  6.4e-31;
                                      DB 8;
                                                                                                                                                                                                                                                                                                                                                                    16; Mismatches
                                                                                                                                                                                                                                                                                                                                                     LGGTAFVQMPAHGLFPWCGLLLDTRTLEVQ 943
                                     Score 478;
Pred. No. 6.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Example 1; SEQ ID NO 10; 141pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           <u>.</u>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         HIV RT/hTERT chimeric construct
                                                                                                                                                                                                                                                                                                                                                                                                                                              ADG70120 standard; protein; 592
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Human immunodeficiency virus 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Stouten
                                   8.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             14-APR-2003; 2003WO-EP003874.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    08-MAY-2002; 2002US-0378820P
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (PHAA ) PHARMACIA ITAL SPA.
                                                             Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Moll J, Schnuchel A,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   WPI; 2004-012095/01.
                                               Similarity
          576 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        WO2003095605-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 11-MAR-2004
                                               Best Local Sim
Matches 132;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  20-NOV-2003.
         Sequence
                                                                                                                                                                                           739
                                                                                                                                                                                                                                               799
                                   Query Match
                                                                                                               63
                                                                                                                                                                 93
                                                                                                                                                                                                                                                                                                  854
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ADG70120;
                                                                                                                                                                                                                                                                                                                                                     914
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Chimeric
                                                                                                                                                                                                                                                                                                                                                                                                                     RESULT
                                                                                     ò
                                                                                                            셤
                                                                                                                                         ò
                                                                                                                                                               ద
                                                                                                                                                                                                                   a
                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                        요
                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                           셤
```

108 738 853

184

```
The invention relates to the isolation of compounds that bind and inhibit the activity of HIV-1 reverse transcriptase (RT) or human telomerase reverse transcriptase (hTERT). The method involves determining these compounds using a HIV-1 RT/hTERT chimeric construct containing the catalytic sites of each enzyme. The nucleic acid is useful for treating or preventing unregulated cellular growth, including cancer cell and tumor growth. It is also useful in gene therapy. Compounds that inhibit telomerase activity can be used to trat cancer. The vectors of the invention can be used to amplify DNA or RNA encoding HIV-RT/hTERT and/or express DNA which encodes HIV-RT/hTERT. This sequence corresponds to a
                                                                                                                                                                                                                                                                                                                                                                                                                                                 624 IPKPDGLRPIVNMDYVVGARTFRREKRAERLTSRVKALFSVLNYERARRPGLLGASVLGL 683
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   108
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    684 DDIHRAWRTFVLRVRAQDPPP-----ELYFVKVDVTGAYDTIPQDRLTEVIASIIKPQNT 738
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        739 YCVRRYAVVQKAAHGHVRKAFKSHVSTLTDLQPYMRQFVAHLQETSPLRDAVVIEQSSSL 798
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              NEASSGLFDVFLRFMCHHAVRIRGKSYVQCQGIPQG----SILSTLLCSLCYGDMENKL 853
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               150 NNETPG----IRY----EP 184
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      185 FKKQNPDILLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGCVVNLRKTVVNFPVEDEA 244
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       cytostatic, gene therapy, reverse transcriptase-Inhibitor, HIV-1; human telomerase reverse transcriptase; hTERT; chimeric, catalytic site; unregulated cellular growth; cancer; tumor.
                    for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             -----TIP-----SI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  FAGIRRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGCVVNLRKTVVNFPVEDEA
                      or f
New HIV-1 Reverse Transcriptase and human Telomerase Reverse
Transcriptase proteins and nucleic acids, useful in gene therapy or treating or preventing unregulated cellular growth, e.g. cancer c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ------PHPAGLKKNGYFVKVDVTGAYDTIPWDE-----
                                                                                                                                                                                                                                                                                                                                                                     8.0%; Score 478; DB 8; Length 605; 40.0%; Pred. No. 6.8e-31; ive 16; Mismatches 38; Indels 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        943
                                                                                                                                                                                                                                                                                                 chimeric HIV-RT/hTERT protein construct.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Example 1; SEQ ID NO 11; 141pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        LGGTAFVQMPAHGLFPWCGLLLDTRTLEVQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      HIV RT/hTERT chimeric construct #13.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Ź
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ADG70132 standard; protein; 816
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Homo sapiens.
Human immunodeficiency virus 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           137 -DFRKYT------ÀF-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          14-APR-2003; 2003WO-EP003874
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                              Conservative
                                                                                                                                                                                                                                                                                                                                                                                           Similarity
                                                                                                                                                                                                                                                                                                                                    Sequence 605 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    WO2003095605-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     11-MAR-2004
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         20-NOV-2003
                                                                                                                                                                                                                                                                                                                                                                                                        Matches 132;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         245
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ADG70132;
                                                                                                                                                                                                                                                                                                                                                                         Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       109
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        914
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Chimeric
                                                                                                                                                                                                                                                                                                                                                                                             Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ADG70132
 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                임
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
```

```
The invention relates to the isolation of compounds that bind and inhibit the activity of HIV-1 reverse transcriptase (RT) or human telomerase everse transcriptase (HTRT). The method involves determining these compounds using a HIV-1 RT/HTRT chimeric construct containing the catalytic sites of each enzyme. The nucleic acid is useful for treating or preventing unregulated cellular growth, including cancer cell and tumor growth. It is also useful in gene therapy. Compounds that inhibit telomerase activity can be used to treat cancer. The vectors of the invention can be used to amplify DNA or RNA encoding HIV-RT/HTERT and/or express DNA which encodes HIV-RT/HTERT. This sequence corresponds to a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       --QLGI 332
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          684 DDIHRAWRTFVLRVRAQDPPP----ELYFVKVDVTGAYDTIPQDRLTEVIASIIKPQNT 738
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 -------PHPAGLKKNGYFVKVDVTGAYDTIPWDE-------360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   739 YCVRRYAVVQKAAHGHVRKAFKSHVSTLTDLQPYMRQFVAHLQETSPLRDAVVIEQSSSL 798
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         R---DGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGCVVNLRKTVVNFPVEDEALG 915
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             cytostatic; gene therapy; reverse transcriptase-Inhibitor; HIV-1; human telomerase reverse transcriptase; hTERT; chimeric; catalytic site; unregulated cellular growth; cancer; tumor.
                                                                                                                                                              New HIV-1 Reverse Transcriptase and human Telomerase Reverse Transcriptase proteins and nucleic acids, useful in gene therapy or for treating or preventing unregulated cellular growth, e.g. cancer cell or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     624 IPKPDGLRPIVNMDYVVGARTFRREKRAERLTSRVKALFSVLNYERARRPGLLGASVLGL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NEASSGLFDVFLRFMCHHAVRIRGKSYVQCQGIPQGSILSTLLCSLCYGDMENKLFAGIR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               NNETPG----IRY-----QYNVLPQGWKGSPAI----FQSSMTKILEPFR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                42; Indels 140;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length 816;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        -DFRKYT------TIP--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       303 IDKPDGLRKLVD-----FR-----ELNKRTQDFWEV----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
7.7%; Score 461; DB 8;
Best Local Similarity 39.9%; Pred. No. 2.8e-29;
Matches 131; Conservative 15; Mismatches 42;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             943
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  chimeric HIV-RT/hTERT protein construct
                                                                                                                                                                                                                                                        Claim 1, SEQ ID NO 22; 141pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GTAFVQMPAHGLFPWCGLLLDTRTLEVQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Ä.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          chimeric construct #7.
                                                                                        à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ADG70126 standard; protein; 456
                                                                                        Stouten
                 08-MAY-2002; 2002US-0378820P.
                                                    (PHAA ) PHARMACIA ITAL SPA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (first entry)
                                                                                        Schnuchel A,
                                                                                                                             WPI; 2004-012095/01.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Sequence 816 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          HIV RT/hTERT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    11-MAR-2004
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ADG70126;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 333
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              799
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 374
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      859
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             916
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  471
                                                                                        Moll J,
셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
```

```
DDIHRAWRIFVLRVRAQDPPP----ELYFVKVDVTGAXDTIPQDRLTEVIASIIKPQNT 738
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    -DFRKYT----TIP----SI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NEASSGLFDVFLRFMCHHAVRIRGKSYVQCQGIPQG----SILSTLLCSLCYGDMENKL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           150 NNETPG----IRY----EP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PAGIRRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGCVVNLRKTVVNFPVEDEA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           739 YCVRRYAVVQKAAHGHVRKAFKSHVSTLTDLQPYMRQFVAHLQETSPLRDAVVIEQSSSL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     tumor growth
                                 11-MAR-2004
                                                                                                                                                                                                                                                                                                                                                     20-NOV-2003
                                                                                                                                                                                                                Chimeric
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           624
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      79
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   684
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              109
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        137
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  799
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          854
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Moll J,
           NAMES OF THE PROPERTY OF THE P
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        The invention relates to the isolation of compounds that bind and inhibit the activity of HIV-1 reverse transcriptase (RT) or human telomerase reverse transcriptase (HTRR). The method involves determining these compounds using a HIV-1 RT/HTERT chimeric construct containing the catalytic sites of each enzyme. The nucleic acid is useful for treating or preventing unregulated cellular growth, including cancer cell and tumor growth. It is also useful in gene therapy. Compounds that inhibit telomerase activity can be used to treat cancer. The vectors of the invention can be used to amplify DNA or RNA encoding HIV-RT/HTERT and/or express DNA which encodes HIV-RT/HTERT. This sequence corresponds to a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           624 IPKPDGLRPIVNMDYVVGARTFRREKRAERLISRVKALFSVLNYERARRPGLLGASVLGL 683
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             102
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DDIHRAWRIFVLRVRAQDPPP----ELYFVKVDVTGAYDTIPQDRLTEVIASIIKPQNT 738
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          739 YCVRRYAVVQKAAHGHVRKAFKSHVSTLTDLQPYMRQFVAHLQETSPLRDAVVIEQSSSL 798
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              143
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          NNETPG----IRY-----EP 178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ----- 130
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NEASSGLFDVFLRFMCHHAVRIRGKSYVQCQGIPQG----SILSTLLCSLCYGDMENKL 853
                                                                                                                                                                                                                                                                                                                                                                                                              New HIV-1 Reverse Transcriptase and human Telomerase Reverse Transcriptase proteins and nucleic acids, useful in gene therapy or for treating or preventing unregulated cellular growth, e.g. cancer cell or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             FKKQNPDILLIRLVDDFLLVTFHLTHAKTFLKTLVRGVPEYGSVVNLRKTVVNFPVEDEA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     İDKPDGLRKLVD------PR-----ELNKRIQDFWEV-------QLGI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          -DFRKYT------TIP-----SI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              FAGIRRDGLLLRLVDDFLLVTPHLTHAKTFLRTLVRGVPEYGCVVNLRKTVVNFPVEDEA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Indels 144; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ----PHPAGLKKKGYFVKVDVTGAYDTIPWDE----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length 456;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                39;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match 7.7%; Score 459; DB 8; Best Local Similarity 39.4%; Pred. No. 1.8e-29; Matches 130; Conservative 17; Mismatches 39
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      LGGTAFVQMPAHGLFPWCGLLLDTRTLEVQ 943
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Example 1; SEQ ID NO 16; 141pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         chimeric HIV-RT/hTERT protein construct.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Stouten P;
Chimeric.
Homo sapiens.
Human immunodeficiency virus 1.
                                                                                                                                                                                    14-APR-2003; 2003WO-EP003874
                                                                                                                                                                                                                                 08-MAY-2002; 2002US-0378820P
                                                                                                                                                                                                                                                                           (PHAA ) PHARMACIA ITAL SPA
                                                                                                                                                                                                                                                                                                                           Schnuchel A,
                                                                                                                                                                                                                                                                                                                                                                     WPI; 2004-012095/01.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence 456 AA;
                                                                                          WO2003095605-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       tumor growth
                                                                                                                                       20-NOV-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      914
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 239
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     73
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  684
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          131
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       199
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                103
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              854
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           179
                                                                                                                                                                                                                                                                                                                           Moll J,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RESULT 99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ADG70124
  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ठ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
```

```
The invention relates to the isolation of compounds that bind and inhibit the activity of HIV-1 reverse transcriptase (RT) or human telomerase reverse transcriptase (HTSRT). The method involves determining these compounds using a HIV-1 RT/hTSRT chimeric construct containing the catalytic sites of each enzyme. The nucleic acid is useful for treating or preventing unregulated cellular growth, including cancer cell and tumor growth. It is also useful in gene therapy. Compounds that inhibit telomerase activity can be used to treat cancer. The vectors of the invention can be used to amplify DNA or RNA encoding HIV-RT/hTSRT and/or express DNA which encodes HIV-RT/hTSRT. This sequence corresponds to a chimeric HIV-RT/hTSRT protein construct.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  13
                                                                                                                                      cytostatic, gene therapy, reverse transcriptase-Inhibitor, HIV-1, human telomerase reverse transcriptase, hTERT; chimeric, catalytic site, unregulated cellular growth; cancer; tumor.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               New HIV-1 Reverse Transcriptase and human Telomerase Reverse Transcriptase proteins and nucleic acids, useful in gene therapy or for treating or preventing unregulated cellular growth, e.g. cancer cell or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               IPKPDGLRPIVNMDYVVGARTFRREKRAERLTSRVKALFSVLNYERARRPGLLGASVLGL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            IDKPDGLRKLVD-------FR-----ELNKRTQDFWEV-------QLGI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gapa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Indels 144;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length 462;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              39;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ; Score 459; DB 8;
; Pred. No. 1.9e-29;
17; Mismatches 39
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Example 1; SEQ ID NO 14; 141pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ä
                                                                 HIV RI/hIERT chimeric construct
                                                                                                                                                                                                                                                                                                                               Homo sapiens.
Human immunodeficiency virus 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         14-APR-2003; 2003WO-EP003874.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              08-MAY-2002; 2002US-0378820P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       (PHAA ) PHARMACIA ITAL SPA.
(first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
Best Local Similarity 39.4%
Matches 130; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Schnuchel A,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          WPI; 2004-012095/01
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Sequence 462 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                           WO2003095605-A2
```

136

----PHPAGLKKKGYFVKVDVTGAYDTIPWDE---

798

853

184

244

914 LGGTAFVQMPAHGLFPWCGLLLDTRTLEVQ 943

185

셤 à

ADG70124 standard; protein; 462 AA.

ADG70124

```
914
                                                                                                185
                                                                                                                                                                245
                            ద
                                                                                             셤
                                                                                                                                ઠે
                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             13;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            The invention relates to the isolation of compounds that bind and inhibit the activity of HIV-1 reverse transcriptase (RT) or human telomerase reverse transcriptase (HTBRT). The method involves determining these compounds using a HIV-1 RT/hTBRT chimeric construct containing these catalytic sites of each enzyme. The nucleic acid is useful for treating or preventing unregulated cellular growth, including cancer cell and tumor growth. It is also useful in gene therapy. Compounds that inhibit telomerase activity can be used to treat cancer. The vectors of the invention can be used to amplify DNA or RNA encoding HIV-RT/HTBRT and/or express DNA which encodes HIV-RT/HTBRT. This sequence corresponds to a chimeric HIV-RT/HTBRT protein construct.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         624 IPKPDGLRPIVNMDYVVGARTFRREKRAERLTSRVKALFSVLNYERARRPGLLGASVLGL 683
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DDIHRAWRIFVLRVRAQDPPP----ELYFVKVDVTGAYDTIPQDRLTEVIASIIKPQNT 738
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          739 YCVRRYAVVQKAAHGHVRKAFKSHVSTLTDLQPYMRQFVAHLQETSPLRDAVVIEQSSSL 798
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           149
                                                                                                                                                                                                                          cytostatic; gene therapy; reverse transcriptase-Inhibitor; HIV-1; human telomerase reverse transcriptase; hTERT; chimeric; catalytic site; unregulated cellular growth; cancer; tumor.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 New HIV-1 Reverse Transcriptase and human Telomerase Reverse Transcriptase proteins and nucleic acids, useful in gene therapy or for treating or preventing unregulated cellular growth, e.g. cancer cell or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ------PHPAGLKKKGYFVKVDVTGAYDTIPWDE-------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         IS-----TIP-----SI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           39; Indels 144;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           7.7%; Score 459; DB 8; Length 592; 39.4%; Pred. No. 2.6e-29; Ive 17; Mismatches 39; Indels 1
245 LGGTAFVQMPAHGLFPWSGLLLDTRTLEVQ 274
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        -DFRKYT-----AF-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Example 1; SEQ ID NO 13; 141pp; English.
                                                                                                  Ä
                                                                                                                                                                                            HIV RT/hTERT chimeric construct #4.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       <u>ц</u>
                                                                                               ADG70123 standard, protein; 592
                                                                                                                                                                                                                                                                                                          Homo sapiens.
Human immunodeficiency virus 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Stouten
                                                                                                                                                                                                                                                                                                                                                                                                                        14-APR-2003; 2003WO-EP003874.
                                                                                                                                                                                                                                                                                                                                                                                                                                                        08-MAY-2002; 2002US-0378820P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         39.4%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (PHAA ) PHARMACIA ITAL SPA.
                                                                                                                                                                (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Best Local Similarity 39.48
Matches 130; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Schnuchel A,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   WPI; 2004-012095/01.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Sequence 592 AA;
                                                                                                                                                                                                                                                                                                                                                          WO2003095605-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     tumor growth.
                                                                                                                                                                11-MAR-2004
                                                                                                                                                                                                                                                                                                                                                                                        20-NOV-2003
                                                                                                                                ADG70123;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         79
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        684
                                                                                                                                                                                                                                                                                           Chimeric.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        137
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        109
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Moll J,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     a
                  유
                                                                                                                 ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ઠ
```

THIS PAGE IS BLAWK